Elementary COMMERCIAL GEOGRAPHY

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BY

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AUTHOR OF A TEXT-BOOK OF COMMERCIAL GEOGRAPHY

"I am persuaded that whatever facilitates intercourse between the different portions of the human family will have the effect, under the guidance of sound moral principles, to promote the best interests of man."—S. F. B. MORSE.

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PREFACE

THE approval given to *A Text-Book of Commercial Geography* by many teachers who are using it in their classes has encouraged the preparation of this smaller book which, it is hoped, will meet the needs of a large number of students who complete their school drill in the grammar grades. The author has attempted to give, simply and broadly, a view of the world in its relation to man as a producer and a trader. The aim, kept constantly in view, has been to deduce from the concrete the natural laws of trade, to avoid most minutiæ, and to exclude many subtopics that are adapted for treatment only in a more extended course of study.

Particular emphasis has been given, throughout the book, to improved transportation, the application of steam-power to manifold forms of machinery, and the progress in chemical science as the main factors in the present development of commerce and industries. It has also been thought useful to call special attention to the great trade routes that are followed by those commodities which are most prominent in international commerce.

The chapters on the United States have been lengthened by the fact that all the natural products included in the book, with a very few exceptions, because of their intimate connection with our industries and trade, have been treated in these chapters. The effort has been made to show clearly, and as fully as space permitted, the nature, distribution, and uses of these products and the commerce in them.

In the chapters given to foreign countries, the special aim has been to present and emphasize only their broadest aspects—their resources, what they have to sell, what they need to buy, their commercial facilities, and their trade relations with the United States; in other words, to fix in the mind of the student only the larger facts, including the intellectual, moral, and material conditions of the inhabitants, which determine the place and importance of these countries among trading nations.

The maps and other illustrations have been selected with a view to illuminating the text and imparting information that could not otherwise be so clearly conveyed.

Nearly all the statistics are tabulated at the end of the volume. It is suggested that teachers make constant use of these tables wherever they apply to the work of the class room.

Dr. Francis R. Lane, Director of High Schools, Washington, D. C., has given invaluable assistance throughout the book in matters of order, arrangement, and treatment. The author is most desirous to acknowledge his great indebtedness to Dr. Lane, to whose collaboration the pedagogic efficiency of the text is largely due.

He is also under many obligations to Mr. H. E. Hayes for his assistance in collecting the illustrations; to many official and other sources of information in our own and other countries; and especially to the publications of our Bureau of Statistics, whose Chief, the Hon. O. P. Austin, has kindly facilitated the receipt of important data.

A book like this has nothing to do with unnatural conditions that injure or stifle trade and industry. War withers the peaceful pursuits that man has developed, but trade and production upbuild the world and spread its blessings. We are dealing here with the natural aspects of production and commerce and not with the abnormal effects in which war involves them.

CYRUS C. ADAMS.

January 1, 1919.

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ILLUSTRATIONS AND MAPS

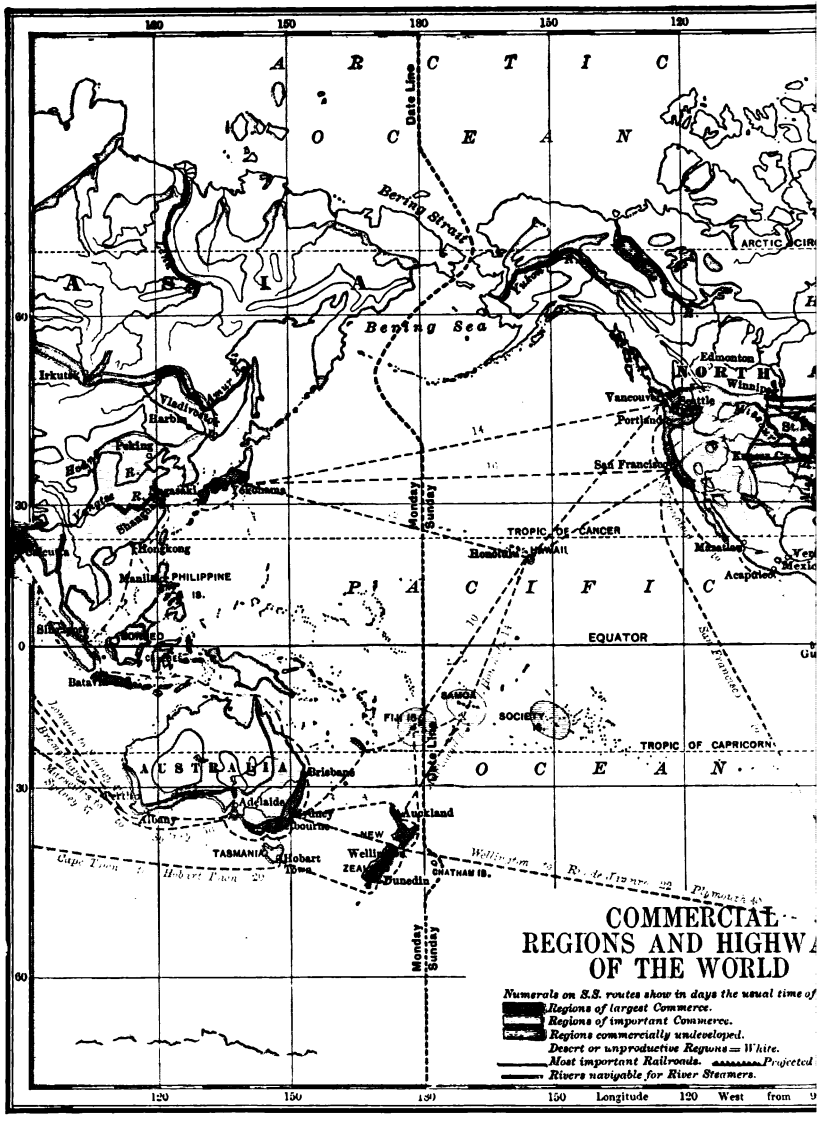

FIG. 1.—Observe the continental railroads which, connecting with the ocean routes, girdle the eart constantly growing in commercial importance. The areas in white are not likely ever to be ve cumnavigating the earth, is placed in the Pacific, where navigators may most conveniently add that United States islands may have the western and Russian islands the eastern date; also western date to the Philippines, but it was so inconvenient for the business men of the islands a

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nd of Hongkong that the eastern date was adopted.

ELEMENTARY COMMERCIAL GEOGRAPHY

CHAPTER I

NATURE AND CONDITIONS OF COMMERCE

The necessity for commerce—Domestic and foreign trade—Conditions required for large commerce—Commercial geography.

The necessity for commerce.—Without the aid of his fellow-man, no one can produce all the food, clothing, shelter, and other things he needs to nourish his body and develop his mind. Even the savage fisherman of the Congo, whose needs are few, exchanges his fish for the yams, bananas, and maize of the neighboring planter, or trades with the hunter for his monkey-skins or ivory. Our own farmers, who raise grain, cotton, or tobacco; the ranchmen of the Western plains, who care for thousands of sheep and cattle—have neither the skill nor the time to make plows or to weave cloth. They must, therefore, exchange the things which they produce for groceries, garments, house furniture, and other comforts produced by the toil of others. This is trade or commerce.

Domestic commerce.—If our neighbor, the grocer, sells commodities that are as good and as cheap as those of his rival in business a mile away, we are likely to give him our trade. Men do not send hundreds or thousands of miles for what they need if they can produce these articles just as cheaply at home. No matter where we may live, as a rule, we are able to get most of the things we need from

the products of our country. For example, Germany, though she expends many millions of dollars every year for foreign wheat, flour, and rye, still raises seven-eighths of all the breadstuffs her people consume. The people of the United States buy $40 worth of home products for every dollar they expend for foreign goods. We see, therefore, that the domestic or home trade of a people is always many times larger than its foreign trade.

Foreign commerce.—Still, many necessaries or comforts of life can not be obtained in one's own country. The tea and coffee which the Minnesota wheat-grower drinks must be brought to him thousands of miles by land and sea. His feet could not be shod with rubber shoes if men did not venture deep into the gloom of tropical forests to get raw rubber from the trees and vines that produce it. Many of the Dutch build stone houses, but as there is no building-stone in the Netherlands, it must be sent to them from foreign countries. Maize will not ripen in the cool summers of Great Britain, and so the British people buy from us millions of dollars' worth of corn every year to feed to their live stock. Thus it is seen that every part of the world is dependent upon other parts for many of the things it needs. This gives rise to foreign or international commerce.

Conditions of commerce.—Commerce does not thrive unless conditions favorable to its growth exist. If some of the great differences between early commerce and modern commerce are explained, we shall clearly understand why trade in the early times was very much smaller, in proportion to the population, than it is in our own day.

Large commerce requires both abundant raw material and large manufactures.—Producers of raw materials such as wheat, cotton, and cattle can give little or no attention to turning these commodities into flour, cloth, meat, and leather. New England, with worn soil, raising little grain, no cotton, and only small herds and flocks, could not be

prosperous without its thousands of mills and shops that turn raw products into articles which the whole world uses. But in early times there were no large manufactures. Kings of a thousand years ago had their clothing made by women on their farms. Every village had its weaver, its blacksmith, and its leather-worker. Europe could not buy many things from Asia, because it had no manufactures with which to pay for them. Nearly every Asian product it purchased was paid for with gold and silver, which few persons were able to accumulate. So there was but little trade. Most civilized lands now have a great many factories, which change the products of the farm, the forest, and the mine into countless things that we use every day; thus the articles of trade have been greatly increased and commerce has grown enormously.

Large commerce requires rapid and cheap transportation.—Except along waterways, there could not be much trade, when roads were so few and wretched that Englishmen sometimes starved in one district though wheat was plentiful in another; or when land carriage was in clumsy, slow carts, or on the backs of packhorses, mules, or men, so that grain, timber, and many other necessaries could not be carried far, because they were too heavy to bear the cost of such expensive transport. There could be no great world trade when the oceans were highways only for tiny vessels that seldom ventured out of sight of land. Asia could have little intercourse with Europe when the freight-trains were camel caravans to Constantinople. Only silks, precious stones, costly spices, or other expensive goods were worth carrying hundreds of miles by caravan. To-day, steam and electric power moves all kinds of commodities, doing easily, swiftly, and cheaply an amount of work that in early times would have required many millions of men and animals to do slowly and at great cost.

Commerce requires protection.—In early times the feudal barons of Europe often robbed the caravans of wealthy

merchants on the road. Even if they did not rob the traveler outright, they forced him to pay a heavy tax for the privilege of passing through their territories. Large trade could not be developed under such circumstances. Civilized governments to-day keep police and soldiers on the land, and navies on the sea, to protect the lives, property, and business of their citizens. The producer and the merchant are encouraged to toil, because they know they will be permitted to enjoy the fruit of their labors.

Commercial geography.—Any book devoted, as this one is, to the geography of commerce must tell how the materials that man uses are distributed in this great workshop, the world. Where are the regions in which men can produce a great deal more wheat, rubber, meat, gold, or other commodities than the people there can consume? Where are the regions that have too small a supply of these desirable things, and that need to buy the surplus of the countries that are overflowing with them? Where are the great centers in which materials are turned into the countless articles that meet the needs of the human race? Along what great routes is food transported thousands of miles to those who need to buy it, or various substances taken to the factories which change them into many articles of commerce? What are the influences that stimulate trade, or hinder or destroy it? Commercial geography must answer these questions.

Fig. 1 shows how various parts of the world differ from one another in commercial importance. The colors on the map illustrate the differences which climate and other influences produce in the commercial value of the various regions. The following chapters will tell what the influences are that so greatly affect commerce.

CHAPTER II

NATURAL CONDITIONS AFFECTING COMMERCE

The influence of climate—Forms of the earth's surface—The ocean—Winds and currents.

MANY natural conditions—such as the climate of different countries, the nature of their coasts, the position of their harbors, mountains, valleys, and other forms of the land and the quality of their soils—have a great influence upon their commerce. Some of these influences will be considered in this chapter.

Hot climates.—It would be unwise to send large cargoes of woolen cloth to hot countries; the market for these fabrics is in cooler regions, while there is a great demand for cool cottons in hot countries. We should not expect to sell any kind of goods in large quantities in the tropical Amazon valley or Congo forests. In the excessive heat and moisture of those regions, where there is little need for clothing, articles of food like the banana grow wild and man's wants are few. He has little energy, for he can live almost without work. Many tropical countries, therefore, could have very little part in commerce if they did not produce rubber, cabinet woods, quinin, drugs, fruits, and other products that are needed in other lands.

Cold climates.—We should not expect to sell much in the arctic regions, because very few people live in those frozen lands; and the animals they kill for food, the skins and furs they fashion into garments, and the snow and stone huts in which they live, are better adapted for their needs than the food, cloths, or lumber that we might send them.

We should have no business interests in the arctic regions if they did not possess commodities that manufacturing countries need: whale oil and bone, seal oil and skins, the light and warm down with which the eider-duck lines its nest, or the superior iron ore of the Gellivare mines in Sweden.

Temperate climates.—Man has the greatest energy of body and vigor of mind in the genial air of the temperate zones. Here he works hardest with brain and hand. He invents many conveniences and engages in many industries that multiply the comforts of life and add to the blessings of civilization. He makes a greater variety of desirable things and buys and sells more than the people of the other zones. Thus it happens that the larger part of the world's commerce is between the busy farmers, manufacturers, and other workmen of the temperate zone.

Temperate or frigid climates are found in the higher parts of the tropical zone, because climate gradually grows cooler as the land rises above sea-level. The highest mountain peaks of the Andes, under the equator, are capped with snow, while the high plains near them may be as cool as a Minnesota summer. The city of Quito stands upon a plateau nearly 10,000 feet above the sea. From their homes the inhabitants of the city can see eleven mountain summits white with snow the year round. The farmers on this high plateau raise their crops in a climate that is like continual spring; and all along the uplands of the Andes the people do not need to buy our wheat or other grains of the temperate zones, because they can raise them, though the lowlands near them produce only tropical products (Fig. 2).

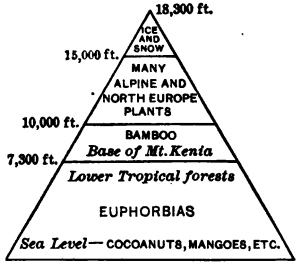

FIG. 2.—Showing the effect of altitude in distributing vegetation from the tropical sea-level to the frigid summit of Mount Kenia, under the equator in East Africa.

Rainfall.—The sea is the greatest source of rain; nearly all regions near the sea have a larger rainfall than the part of the continents far inland. As good crops can not be raised with less than 18 to 20 inches of rain every year, the drier parts of the world can not produce much vegetable food, unless they can use rivers or lakes for irrigation.

Through evaporation, tiny vapor-bubbles, which are lighter than air, are constantly rising from all lakes, rivers, and seas. The wind carries these water-bubbles in the form of vapor, the clouds are condensed, and the raindrops fall upon the land; but if the prevailing winds pass over the lands toward the sea instead of over the sea to the land, they are dry winds and there is little or no rainfall. This is the reason why there is little rain in the Sahara, in parts of the Gobi desert, and on the coasts of Southern California, Peru, and southwest Africa. Such regions cannot have great trade. These facts show us that winds, as rain-carriers, have large influence upon commerce (Fig. 3).

Coasts.—The high, precipitous rock wall forming most of the south coast of Sicily is a type of coast line that is most unfavorable for commerce. It is dangerous for vessels to approach such coasts; unless there are openings in them to sheltered harbors there can be no sea trade. For this reason most of the population of Sicily lives nearer the north and east coasts, where there are fishing and trading ports. Straight coast lines, like that of the larger part of Africa, are unfavorable to commerce, because, as there are few good harbors, the goods to be shipped must be sent far to a seaport.

Harbors.—Sea-going and lake vessels require sheltered places where they may load or unload their cargoes in calm water or ride safely at anchor in severe storms. Deep indentations in coast lines provide many harbors and thus help commerce. The broken coast of Cuba has so many fine harbors that the chief tobacco district, the sugar-cane district, and the mining district have each fine ports for

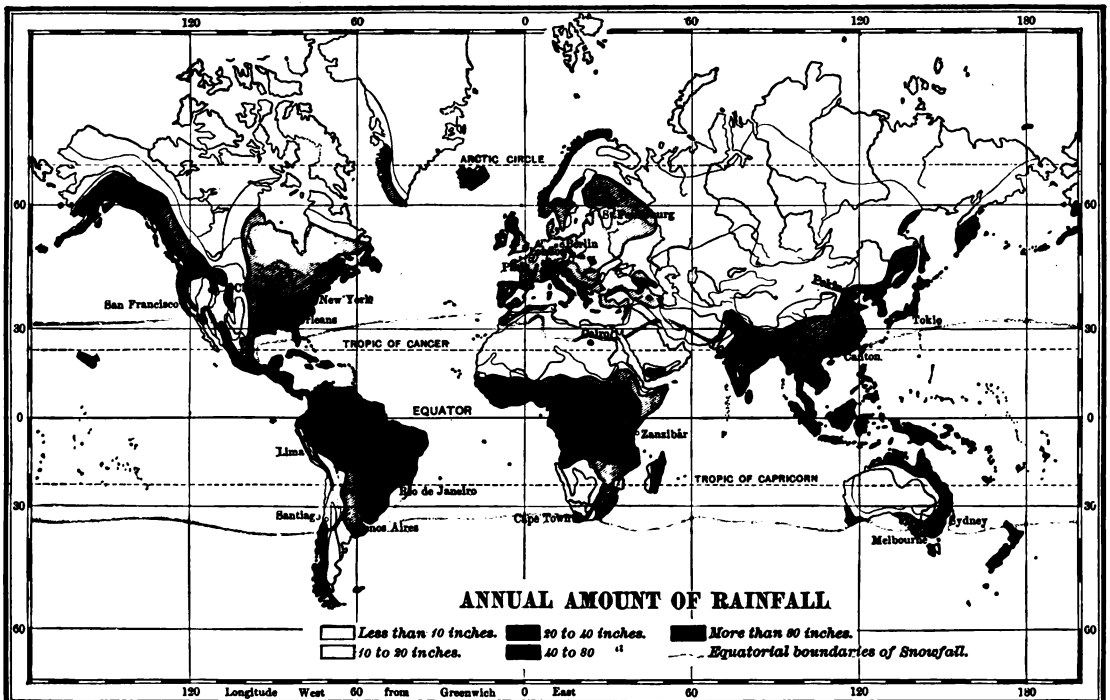

FIG. 3.—Observe the coasts that have little rainfall, and consequently little development. In the temperate zones the regions having from twenty to fifty inches of rain in a year are most productive. Great rainfall, combined with intense heat, in parts of the tropics, are unfavorable for agriculture, as in the Amazon basin.

their trade. Our broken Atlantic coast supplies numerous harbors, and is far more favorable to commerce than the high and rocky Pacific coast, which is exposed to the full fury of gales and has only a few places for the shelter of ships and steamers. One of these places is San Francisco, which has a very fine harbor (Fig. 4).

FIG. 4.—The valley, submerged by the sea, entering through the Golden Gate, gives San Francisco one of the largest harbors in the world.

The vast development of European trade is largely due to the many fine harbors which the inlets along the coast of Europe provide. Good harbors are very important for the commerce of civilized peoples. Most of the dangers to navigation are near land, for coastal waters are shallow and ships may be wrecked on rocks or driven ashore in storm or fog. Low, sandy coasts, sloping very gradually to deep water, are unfavorable for sea trade, because vessels are likely to be stuck on their sandy bottom. For this reason, there is little navigation in Chinese waters along the west and north sides of the Gulf of Chih-li.

Roadsteads.—A place near shore that affords merely good anchorage ground but no shelter from storms, is called a roadstead or roads; but as roadsteads expose vessels to the full fury of ocean waves, breakwaters are often built, making artificial harbors. This has been done at Algiers and at Cherbourg, France (Fig. 5).

FIG. 5.—French enterprise has given Algiers, which had only anchorage ground, a fine harbor by means of long breakwaters enclosing a large area of deep water.

Plains and plateaus.—About one-half of the earth's surface is called lowland, for it is not more than 1,000 feet above the sea-level. Wherever the lowland stretches away with a comparatively level surface it is called a plain or prairie. Higher tracts of more or less level land are called plateaus or table-lands. Fertile plains, like the prairies of our country, or the plains of Russia and Hungary, are the greatest grain-raising regions, and are often called the granaries of the world. There are also wide plains and plateaus far inland that do not have sufficient rainfall to nurture crops of grain, but, growing abundant grass, they raise millions of cattle and sheep; such are our great plains stretching from the middle of the Dakotas to Texas, and westward to the lofty plateau on which the Rocky Mountains stand. We may think of the wide-spreading plains and plateaus as the greatest source of maize and wheat, meat, wool, and hides. Their level surface also is favorable to transportation, for it is easy to build railroads across them. The great grass regions, however, can not have a large trade except in the few commodities they export, for a dense population is never found in regions where grazing is the chief pursuit. Why?

Mountains.—Most of the men who spend their lives digging for the wealth that is found underground toil in mountain regions, because the larger part of our iron, gold, silver, and other metals, and much of our coal, come from these localities. Many mountain ranges, also, are covered with fine forests. Just as grain-fields and orchards are seen everywhere in fertile lowlands, so metals, coal, and timber are the most characteristic products of the mountains.

The torrents that pour down mountain sides supply more abundant water-power than is found in any other part of the world, so that Switzerland, for example, turns nearly all the wheels of its mills with water.

Mountains also have much influence upon climate.

When one stands on the west slopes of our Pacific coast mountains, he may feel the warm, wet winds coming in from the ocean. As the high ranges stop the eastward movement of these winds, they rise along the great wall of rock till, in the cooler altitudes, their water vapor is condensed and falls as rain. The little wind that escapes over the mountain has been wrung nearly dry; so on the

FIG. 6.—A mountain range that influences climate and hinders commerce.

seaward side of the ranges there may be orchards, vineyards, and fields, while on the landward side, to the east of the mountains, the soil is parched and vegetation scanty.

Mountain ranges hinder commerce so far as they make it difficult to carry commodities from one region to another. The parallel ranges of mountains behind Amoy, Fu-chau, and other ports of southeast China have kept those ports from handling the trade of the great Yangtse valley, where many millions of people have much to sell and need to buy much. The deep indentations in mountain ranges known as passes are of great importance as trade routes, because through them it is possible to establish communications between the regions that the mountains separate.

Rivers.—The upper course of most rivers is a foaming mountain torrent, valueless for navigation, but useful as

water-power. The middle course has a more placid and gentler descent, though sometimes interrupted by falls or rapids, as the Mississippi at Minneapolis and Rock Island. However, with improvements, such as those made at Rock Island and at the Iron Gates in the Danube, steamboats may ply for great distances on the middle course. The lower course is through the low plain of the coast, where the current is so slow that sailing vessels, as well as steamboats, may carry the traffic. These characteristic stages of a river do not always exist as here described; the Mississippi, for example, does not rise among mountains, and rapids are found within ninety miles of the mouth of the Congo.

Deltas.—Rivers that empty into other rivers usually have only one mouth; but those which fall into the sea may divide into several branches forming a delta, as in the Mississippi, Rhine, Danube, and Nile. A delta is an impediment to navigation, for the sand and other material known as detritus which has been brought down the river clogs the delta channels. It is expensive and difficult to maintain in most deltas sufficient depth of water for large vessels. The South Pass, in the Mississippi delta, in which the water was formerly only 8 feet deep, has for years been maintained at a depth of over 30 feet, so that the largest steamers are now able to reach New Orleans.

Estuaries.—When a river enters the sea through only one mouth it may widen till it forms a great inlet called an estuary. These wide river-mouths, such as those of the Elbe, Thames, Gironde, and Congo, are well adapted for shipping and commerce, though their value is sometimes lessened by sand-bars. Some estuaries, as those of the Delaware, Thames, and Congo, enable sea vessels to penetrate far into the land, making it possible to locate great commercial and manufacturing seaports like Philadelphia, London, and Hamburg, a considerable distance from the sea.

Valleys.—The human race has always found it easiest to penetrate far into the land along the river valleys; thus civilization developed first along the great rivers, as the Nile of Egypt, the Ganges and Indus of India, and the Yangtse of China.

Many rivers, overflowing their banks every year, spread far around them the rich alluvium they have carried downstream, thus giving great fertility to their valleys. The banks and delta of the Nile, for example, are fitted to support a very dense population by the fertilizing silt that reaches the Nile from the highlands of Abyssinia.

Oceans.—The Atlantic is most important to commerce, because it unites the great trading and manufacturing nations of the Old and New Worlds which carry on most of the international trade. About 6,000 steam and sailing vessels are scattered over the Atlantic every day in the year; about 400,000 persons are constantly afloat on this greatest of ocean highways. The importance of the Atlantic is increased by the fact that most of the great river highways are tributary to it, supplying many thousands of miles of land water-routes that feed the Atlantic commerce. The most important of these rivers are the Mississippi, St. Lawrence, Orinoco, Amazon, and La Plata of America, the Nile and Congo of Africa, and the rivers of three-fourths of Europe (Fig. 1).

The commerce of the Pacific, on the other hand, receives little traffic from great rivers except from the Yangtse of China, and the Columbia of the United States. The Pacific coast rivers of our country supply only about 900 miles of navigation to the ocean; but the Pacific is of much larger importance now that the Panama Canal has been opened, for it establishes closer trade relations between the great seaports of the Atlantic and the Pacific.

The most important water-routes tributary to the Indian Ocean are the Indus, Ganges, and Brahmaputra of India, and the Irawadi of Burma. The importance of the Indian

Ocean as a trade highway to Europe has been largely increased since the Suez Canal has so greatly shortened the water route between India and Europe.

The ice-choked polar seas are of little value to trade. The whale and seal fisheries of the Antarctic Ocean, once important, were destroyed by overfishing and have only recently been revived. The Arctic Ocean, in three centuries, has yielded vast wealth to man from fish, whales, and furs, but in recent years these industries have declined. Large rivers empty into the Arctic, but as they are frozen more than half the year, they have very little part in international trade.

Tides.—Tides, rising highest in bays and estuaries, are of great importance in commerce. It is impossible, at many ports, for large vessels to enter the harbors except at high tide. The two greatest ports of Europe, London and Hamburg, would be of little value if high tide did not render their docks accessible every day to the largest steamers.

Winds.—As winds have large influence upon navigation, they are important in commerce, though they were more important before steam was used on vessels. Some winds blow in one direction the year around, or for months at a time; sailing vessels often travel far to get into these winds, because they help them toward their port. Ships from New York to north Europe are speeded on their way by the prevailing westerly winds (Fig. 7). If they are bound from Liverpool to South America, they go south till they reach the northeast trade-winds off the coast of Africa, and then, with every sail set, they swiftly cross to the South American coast. When a clipper ship starts from New York for Australia, it sails east almost to the coast of Africa; there it enters the northeast trades and is carried nearly to South America, where it hugs the coast to keep out of the southeast trades, and near Rio de Janeiro gets into the westerly winds, that carry it straight to Australia.

Coming home, it sails east in the westerly winds to the south of Africa, whence the southeast trades take it to the American coast.

The northeast and southeast trade-winds of the Atlantic and Pacific blow steadily all the year, but the trade-

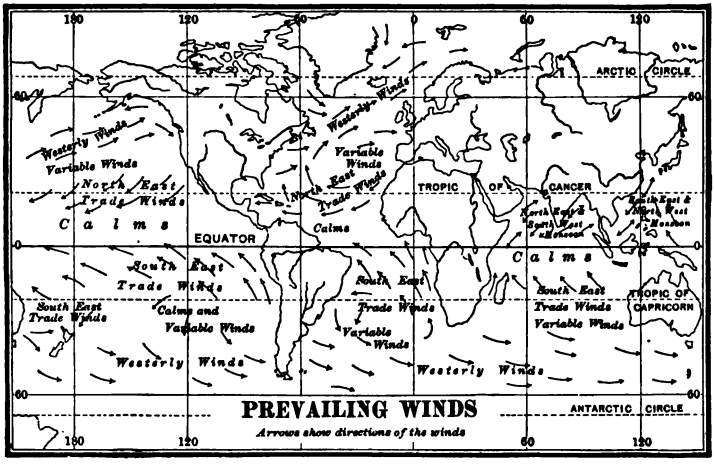

FIG. 7.

winds of the Indian Ocean and China Sea (called monsoons) blow from the north in winter and from the south in summer. Tropical whirlwinds, called typhoons in the monsoon regions, and cyclones elsewhere, sometimes do much damage to shipping and ports. Winds affect the speed even of modern steamships.

Marine currents.—As ocean currents are caused largely by the prevailing winds, they have about the same course over the sea. They help or retard navigation to some extent, according as the course of a vessel is with or against them. A vessel sailing from Panama to Manila, for example, is steered into the equatorial current flowing west, and may thereby gain forty miles a day.

Summary.—The facts given in this chapter show some of the ways in which the forces and forms of nature exert a most powerful influence upon man in his daily life and in his business pursuits. We shall consider in the next two chapters how commerce is affected by man's own character and capabilities, and how he tries to utilize the helpful influences of nature, and to overcome those that hinder him in his work.

CHAPTER III

HUMAN CONTROL OF COMMERCE

The races of mankind—Methods by which modern commerce has been developed.

The races of mankind.—Man lives in all parts of the world except in the antarctic regions. The fact that he alone lives all over the world shows that he more easily adapts himself to heat, cold, differences in food, and other influences than other animals. But climate and food have a powerful effect upon his body and mind. The color of his skin, the form of his body, his physical vigor and mental energy, are affected by the circumstances in which he lives, or his environment. The natives of very hot or very cold regions are less intelligent than those living in temperate climates. The difference in their physical form and appearance has given rise to the division of men into various races, that are broadly classified into the black, yellow, and white types (Fig. 8).

The black races.—The black races live mostly in Africa, south of the Sahara Desert, though they are also found in Australia and some other regions. They are the least civilized, and have the smallest part in trade; but they are capable of great improvement under civilizing influences. Millions of them who were taken to America as slaves are now free men, many own small farms and have acquired the comforts, and even the refinements, of civilized life.

The yellow races.—The yellow peoples include the American Indians and the Eskimos; but most of these races live in Asia. None of them is, as yet, very important in com-

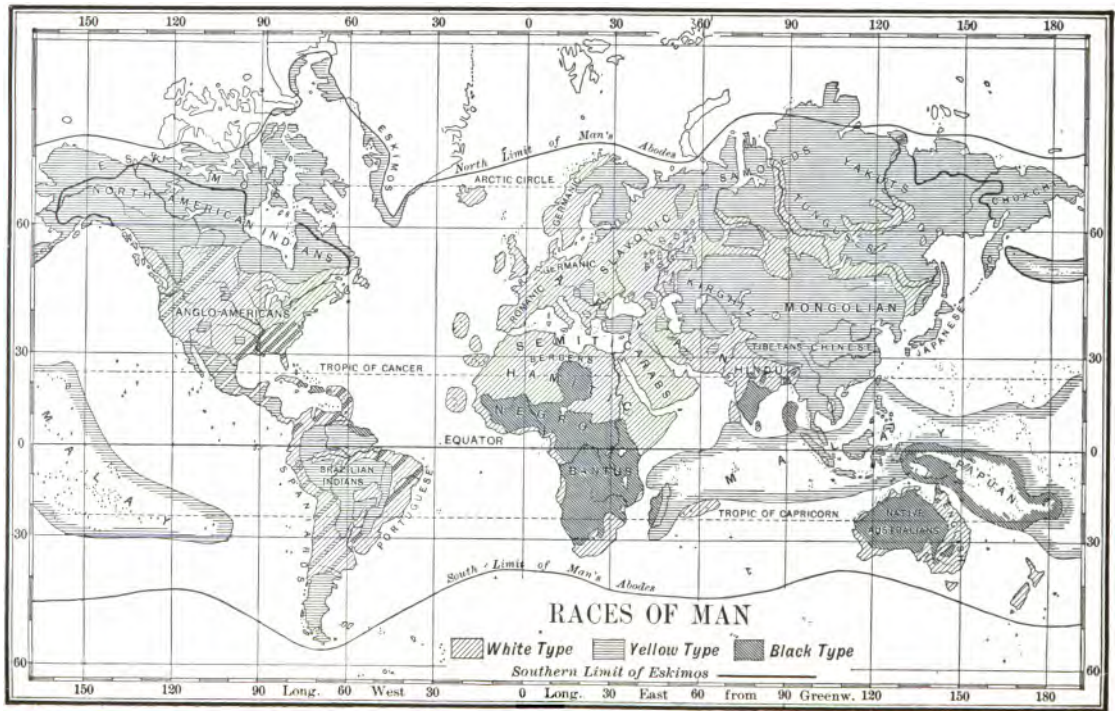
RACES OF MAN
White Type
Yellow Type
Black Type
Southern Limit of Eskimos
North Limit of Man's Abodes
South Limit of Man's Abodes
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
ESKIMOS
NORTH AMERICAN INDIANS
ANGLO-AMERICANS
BRAZILIAN INDIANS
SPANISH
PORTUGUESE
MALAYS
GERMANIC
ROMANIC
SLAVONIC
SAMOYEDS
YAKUTS
TUNGUSES
CHUKCHI
MONGOLIAN
TIBETANS
CHINESE
JAPANESE
HINDUS
SEMITIC
BERBERS
ARABS
HAMITIC
NEGRO
BANTUS
MALAYAN
PAPUAN
NATIVE AUSTRALIANS
150 120 90 60 30 0 30 60 90 120 150 180
Long. West
Long. East from Greenw.

FIG. 8.

merce, except the Mongol varieties, among which are the Japanese and Chinese, who are highly civilized, and have an important share in the world's trade. A large part of the homes of the yellow peoples, or their habitat, as it is called, is the cold, thinly inhabited north lands of Europe, Asia, and America, which yield little except animal oils, furs, and reindeer.

The white races.—The white races are favored by their environment, most of them living in the temperate zones, whose climate, soil, and food tend to produce the greatest power of body and mind. They have, therefore, become the most civilized and progressive of all the races. Developing many needs beyond mere shelter, food, or raiment, they invented numerous conveniences that add comfort and enjoyment to life. A great many industries were established to supply these conveniences. They also developed intellectual wants, which stimulated art and science. A few of the races, known as white, though they are dark-skinned, as in the north of Africa, still live in a state of barbarism.

The Indo-Europeans.—The Indo-Europeans, who have spread all over the world, and control most of its commerce, are the largest branch of the white races. The Indo-Europeans include English and other white races, living in north and central Europe, who occupy North America as far south as Mexico, all of Australia, and South Africa; the Romanic races of Spain and Portugal, who are spread over South America; and the Slavonic Russians, who control the whole of north Asia. These highly developed races have become the rulers of most of the foreign lands they have occupied. The North Europeans have done most to develop natural resources, extend trade, and form stable governments which foster business interests by protecting life and property, but nearly all Indo-Europeans have contributed to make modern commerce what it is. Let us consider some of the methods by which these races have built up

modern commerce till nearly the whole world has become one great trading community.

Labor-saving.—Broadly speaking, we may say that manufactures and commerce have grown to their present large dimensions through numerous devices and inventions for saving labor. Here are a few illustrations of this great fact:

Little cotton was used till it was found that America could produce enormous quantities of it; then Europe wanted cotton cloth, but the demand could not be filled as long as the cotton was spun only by women in their homes and woven into coarse fabrics on rude hand-looms. It happened that about the beginning of the nineteenth century, when steam-power began to be applied to the driving of machinery, the "spinning mule" was invented, by means of which one girl may attend to hundreds of spindles, producing as much yarn in one day as hundreds of women were able to make on their spinning-wheels. Looms driven by steam-power were also made for weaving cotton-yarn into cloth, each machine producing as much cloth in a day as many men could make on the old hand-looms.

There would not have been cotton enough to feed these machines if the old method of picking the seeds out of the fiber by hand had not been superseded by the cotton-gin. The negroes in our cotton belt used to spend their evenings and rainy days seeding cotton, one person being able to seed only four pounds of lint cotton in a week; the perfected cotton-gin seeds 1,000 pounds of cotton in an hour. Raw cotton is thus made into cloth by machinery driven by steam- or water-power so cheaply that millions of poor persons can buy it, though the cloth was once beyond their reach because it was so costly. Many of the great inventions for making cotton fabrics were later introduced into woolen manufactures, with the result that woolen fabrics have steadily declined in price for many years.

Pins were high in price when each pin was hammered

out by hand from a piece of wire; an automatic machine now takes the material and, without any hand-work, produces in a day many thousands of finished, polished pins, stuck on papers, and selling for a trifling sum. Great steam-shovels

FIG. 9.—A steam-shovel loading ore.

dig iron ore out of open pits near Lake Superior and dump it in railroad cars, at a cost for mining of ten to fifty cents a ton. Boots and shoes are cheap because machines have replaced hand-work. They split and cut the leather, do the sewing and pegging, make the heels, and save hand-labor in other ways. One man with a machine sews the soles of 500 or 600 pairs of shoes in a day.

We might, in the same way, examine all the industries of civilized man, finding, in most cases, that his ability to produce good and cheap commodities has been vastly increased by the invention of machinery and the application of steam, water, or electrical power to drive it, thus saving

an enormous amount of physical labor, which is the most expensive form of power.

Subdivision of labor.—Commodities are also improved in quality and cheapened in price by dividing the work of producing them among a number of persons, each of whom is an expert in a single process of manufacture. A Derby hat, for example, passes through many hands. The felt may be cut in one room, stiffened in another, stretched and blocked in a third; in the fourth department the hat is shaped and the rim curled, the work of the presser and finisher being still required before the hat is ready for a purchaser. Each workman becomes very expert in the one thing he has to do; he works rapidly, thus reducing the labor cost of the hat; he does good work, thus insuring a good hat which could not be made so well and cheaply if one man did it all.

This form of labor-saving is found in nearly every industry and branch of trade. In a large department store one employee may buy nothing but hosiery and knit goods, another the silks, and a third the furniture, while each salesman is trained to special knowledge of the stock in a single department and methods of selling it. Subdivision of labor marks the highest development of the production of commodities and trade in them. Nations like the Chinese, who do not understand the advantages of subdivision, each product being the work of a single artisan, lag behind the others.

Transportation.—Commodities, no matter how cheaply and abundantly produced, would be of little value if they could not be transferred cheaply and quickly from the producers to the millions of consumers. No labor-saving inventions have been of greater importance in developing modern commerce than those which have made it easy and cheap to carry wheat from Minnesota to Europe, lumber from San Francisco to South Africa, and building-stone from Norway to the Netherlands. Ships and railroad

trains driven by steam, ship canals, tunnels piercing the mountains, and all other facilities devised to make it easier for men in one place to reach and trade with men in all other places, must be included among the great labor-saving factors that have made modern commerce; but the importance of transportation will make it interesting and profitable to treat the subject more fully in the next chapter.

Chemistry applied to industries.—The modern chemist studies all kinds of substances to learn of what elements they are composed. He reduces substances to their elements and often builds up from them new chemical compounds. Thus the Germans are making indigo by combining its elements which they obtain from other products. Artificial indigo is the same as vegetable indigo, but is cheaper; so a new industry has been created in Germany. A certain kind of iron ore in our country was cast aside as worthless till a chemist found means to reduce it and extract the iron—a discovery that was worth millions of dollars. As chemistry enters into the manufacture of most of the common conveniences of life, such as window glass, kerosene, soap, steel, sugar, dyes, phosphorus from which matches are made, and innumerable other articles, we may readily see how important this science has been to the world. German factories alone employ nearly 10,000 chemists who are constantly striving to improve the processes and lessen the cost of production, and in other ways to make the most of all the materials that man uses. They have found, for example, how to extract two and a half times as much sugar from a pound of beet-root as could be done fifty years ago. This is one of the reasons why the cost of the sugar on our tables has been reduced more than half in thirty years, so that the world can afford to consume much more sugar than formerly; the production of sugar and the trade in it have therefore vastly increased.

These labor-saving discoveries and inventions that have

cheapened and improved production and transportation, and the modern science of chemistry that has shown man the nature of the materials at his hand and how to utilize them best, are the great factors that now enable every part of the world to buy more from other parts of the world than ever before. They have taken many common conveniences, which were once luxuries enjoyed only by a few, into millions of homes.

Good government.—But commerce can thrive only under good government. Men can not work well unless peace and order prevail, and will not produce much if they are likely to be robbed of their products. Bad government in Rome permitted piracy to thrive on the Mediterranean till the Roman sea trade was prostrate and could revive only after Pompey, about 70 B. C., burned 1,300 pirate ships and scattered 22,000 buccaneers among inland colonies far from the sea. All civilized governments encourage industry and trade by protecting their citizens from evil-doers. They also help production and commerce in many ways, as, for example, by improving rivers and harbors and building lighthouses, and by collecting and distributing information of value to farmers and manufacturers. The sea, lakes, and rivers teem with food, and government fisheries boards promote fish culture in various ways. Geological surveys locate mining and quarrying districts, sites for artesian wells, and deal with irrigation problems. All good governments have special care of trade and industrial interests, as the Department of Agriculture and the Bureau of Foreign Commerce at Washington, the Board of Trade in Great Britain, and the Department of Trade and Industry in France.

CHAPTER IV

HUMAN CONTROL OF COMMERCE—(*Continued*)

Communications, transportation, and other conveniences of commerce.

Communications.—We have seen (page 3) that trade was small in the days long before railroads and steamships, when carts were stuck in the mud after every hard rain, and sailors, knowing nothing of the compass, seldom dared to venture out of sight of land. It is now easy to obtain rubber for automobile tires, tropical fruits, tea and coffee, and many other things, simply because man has wonderfully improved the means of carrying freight from one place to another. As we must often meet the men with whom we do business in other places than where we live, as more frequently still we must communicate quickly with our fellow men, no matter how far away they are, the great postal systems of the world have been perfected, the telegraph, telephone, and ocean cable invented, railroad trains that carry us at a speed of more than a mile a minute, and steamships that cross the Atlantic in five days, have been developed. The great commerce of to-day could not exist without these labor-saving methods of carrying ourselves or our thoughts from one place to another.

Animal transportation.—As transport by means of animals is slow and costly, it is not now used to a large extent except for short distances, as in the case of the farmer who takes his produce to the neighboring market-town with his horses, mules, or even his ox-team. Animals, too, including man, who carries his pack on his back or pushes his load in

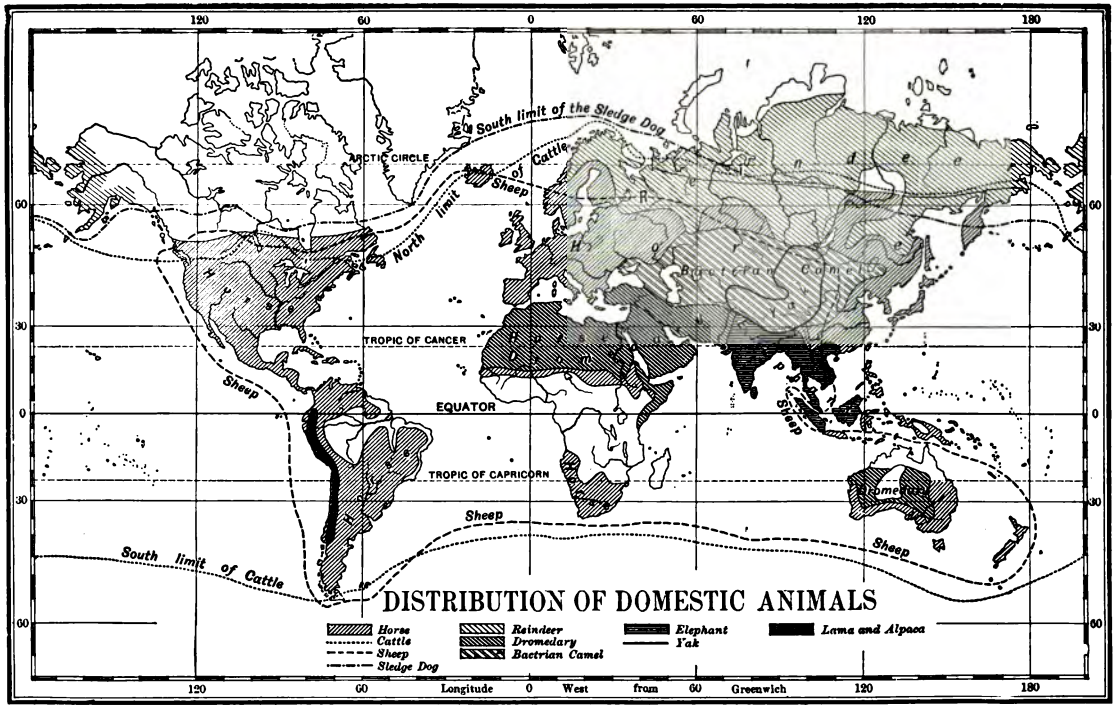

Fig. 10.—The domesticated reindeer is the means of transport of the hunting and fishing folk of northern Europe and Asia. Farther north the dog is a sledge animal; in Belgium and some other parts of Europe he hauls carts to market. The yak is a pack and saddle animal. The Asian elephant is a transport animal, chiefly in the timber trade and Government service. The dromedary (one-hump camel) carries a load of 500 to 700 pounds, while the stronger Bactrian camel (two humps) carries 1,000 to 1,500 pounds. The sure-footed llama seldom makes a misstep on the narrow paths of the Andes, where he is used chiefly to carry gold and silver from the mines to the coast. The horse is found everywhere in temperate and subtropical regions, but has only limited distribution in tropical lands. The donkey is most of all identified with small truck farming in western Asia and all Mediterranean countries. He is valued in America chiefly among breeders of the mule, a hardy, strong animal found in most parts of the world, and especially in America and the Mediterranean countries. The ox is used in most lands as a beast of burden or draft, but for long-distance hauling he is rapidly being supplanted by railroads.

a barrow, are used in undeveloped countries where there are no railroads and no river boats and steamers. If the common roads are very poor, the cost of wagon or cart haulage almost kills commerce, as in parts of China, where coal can not be sold at a profit if it must be carried in carts more than twenty miles. Observe in Fig. 10 the large areas where the sledge-dog, reindeer, camel, yak, or llama are

FIG. 11.—These dogs are hauling the milk cart from which customers in a Belgian town are supplied. Thousands of dogs are used in Belgium to carry fruit, vegetables, and flowers to market.

almost the only means of transport (Fig. 11); and also the wide distribution of the horse and ox, which are still more largely used as pack and draft animals. In tropical Africa, native porters carry loads of 60 to 80 pounds on their backs.

Forty thousand negroes were hired to carry freight along the lower Congo around the cataracts at a cost of over $200 a ton, the journey lasting three weeks. The railroad now carries the freight in two days at about one-tenth of the

FIG. 12.—These negro porters have carried ivory tusks on their backs 235 miles around the rapids in the lower Congo. They are now within a few miles of Matadi, where a European steamer will take their freight.

cost, with the result that the markets obtain far more rubber, ivory, and palm-oil from the Congo and at cheaper prices (Fig. 12).

Water transportation.—It is cheaper to carry freight on water than on land because the same power can move a greater weight through water than over land. For this reason hundreds of steamships are constantly carrying freight from one port to another of the United States

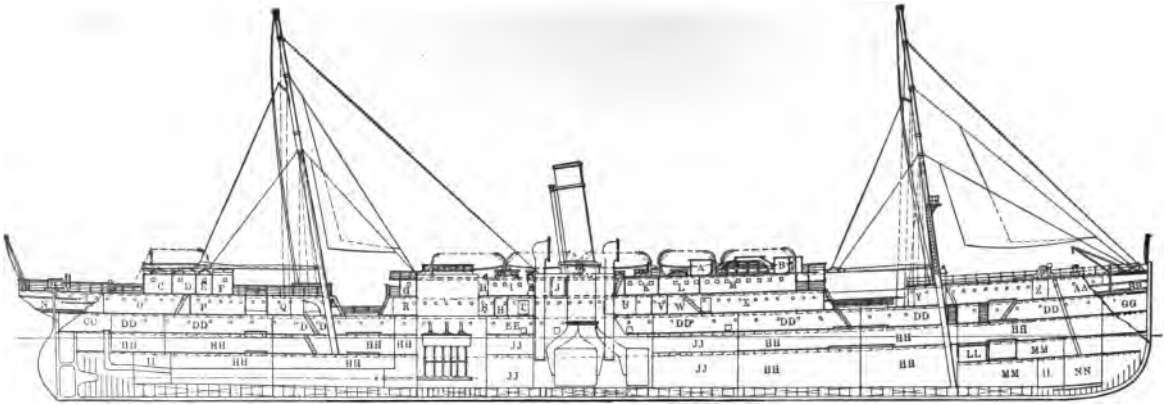

FIG. 13.—SECTIONAL VIEW OF AN OCEAN STEAMSHIP.

A, captain's room.
B, chart room.
C, smoking-room, second class.
D, stairway.
E, women's room, second class.
F, light and air shaft.
G, passageway, first class.
H, passageway.
I, smoking-room, first class.
J, drying-room.
K, dressing-room.
L, vestibule.
M, dining-hall.
N, steam-steering machinery.
O, passenger cabin, second class.
P, dining-room, second class.
Q, dressing-room, second class.
R, bath-room.
S, barroom.
T, oven.
U, kitchen.
V, W, baggage rooms.
X, drawing-room, first class.
Y, steam-kitchen.
Z, paint-room.
AA, ship's crew.
BB, provision room.
CC, sail and cordage room.
DD, passenger, third class, or storage rooms.
EE, mail-room.
GG, ship's stores.
HH, storage rooms.
II, fresh-water tank.
JJ, coal-bunkers.
LL, ice storage.
MM, provision room.
NN, chain room.

(coast trade); as the oceans cover nearly three-fourths of the earth's surface a very large part of the commerce between different countries is carried across seas (deep-sea trade).

As commodities can not be consumed while they are in transit, the sooner they get into the markets the better. For this reason steamships, which travel about four times as fast as sailing vessels, have driven most of the sailing fleet out of business (Fig. 13). Ships with sails are now mainly used by such people as the Gloucester fishermen in their search for cod on the Grand Banks, or for the transport of a comparatively small amount of bulky and heavy freight, such as lumber, wheat, and coal. These vessels ply along the coast, and when time is of no importance, carry freight the world over. We know now how terribly warships can cripple commerce on the sea.

Two causes have greatly cheapened the cost of carrying ocean freight:

1. Improvements in furnaces, boilers, and engines have reduced the cost of steam-power nearly one-half in the past thirty-five years, so that vessels are moved much more cheaply.

2. The substitution of iron and steel for wood in shipbuilding has made it possible to build much larger ships, increasing the carrying capacity and reducing the cost of freight per ton; this means that goods may be sold more cheaply, more people buy them, and more workmen are employed to produce the larger quantities demanded. In 1918, our government was building excellent ships of concrete at a greatly reduced cost.

Ship-canals save time and money because they shorten ocean trade routes and thus reduce freight charges. Steamships from Europe no longer sail around the south of Africa to reach India, because they save over 5,000 miles by passing through the Suez Canal. The export wheat trade of India shows what a wonderful influence a ship-canal may

have upon the industries of a people. Wheat was almost spoiled for flour-making when it was carried around the Cape of Good Hope through the hot tropical waters of the Indian Ocean and the Atlantic; but now it makes a quick passage through the Suez Canal, and so India helps to supply Europe with bread (Fig. 14). Ships from New York travel over 13,000 miles, by way of the Straits of Magellan, to reach San Francisco; but the journey is only one-half as long since the Panama Canal was completed in 1915.

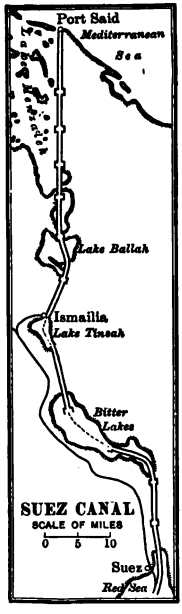

FIG. 14.

More freight is carried on the Great Lakes of North America than on any other lakes of the world. Rivers are not worn out by transportation as railroads are, but just as rails and ties must frequently be replaced by new ones, so many rivers must be dredged now and then to keep the water deep enough for large steamboats. Lake, river, and canal freight charges are cheaper than those of the railroads, but it is so desirable to save time in transportation that they lose much importance as trade routes after railroads are built. They are used mostly to transport heavy and bulky articles, such as grain, coal, iron ore, and lumber. Canals are a very slow means of transportation, and are now important chiefly in the countries of north Europe fronting on the Baltic Sea, where they connect the navigable rivers, so that boats loaded on the Vistula River, near Russia, may be taken west to most of the ports of Germany, the Netherlands, Belgium, and France.

Railroads.—The first really important railroad was opened in 1829 in England, when the little locomotive Rocket, weighing only 7½ tons, drew 44 tons at a rate of 14

miles an hour. The marvelous growth of railroads dates from that first success. The railroads now in operation would stretch from the earth to the moon and clear back again (Fig. 15); and two-fifths of all the railroad track is in

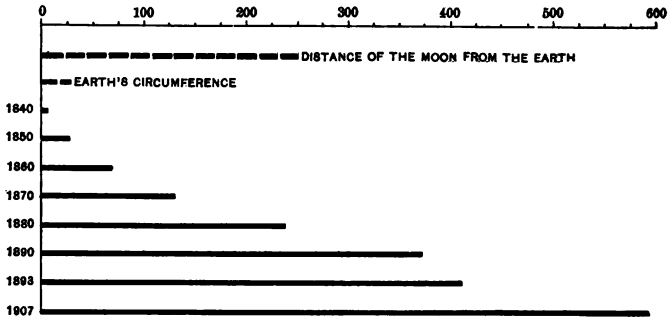

FIG. 15.—Growth of the world's railroads, in thousand miles.

the United States, where almost every farm east of Nebraska and Texas has a railroad station close at hand or only a few miles distant. Many railroads, extending in all directions, enable the producer to send his goods to the market where he may obtain the highest prices, or to the seaport that offers the cheapest rail and ocean freight rates. This is a great commercial advantage. Cheap rail and water freights, for example, have sometimes attracted to our Gulf ports large quantities of grain that would otherwise be shipped from Atlantic ports.

The telegraph.—The American who has cotton to sell wishes to know, every day, the price of cotton in Liverpool, as the quotations there regulate the price of cotton in every country in the world. The farmer needs to know the price of wheat or cattle at the chief markets so that he may ship his commodities where they are most valuable. This is the greatest advantage to commerce of the telegraph which flashes news all over the world by electricity. A network of wires is spread over the lands, and more than 285,000

miles of ocean cable-lines unite all the continents, so that merchants in Chicago and Berlin may transact their mutual business affairs almost as conveniently as though they lived in the same town; and merchants who are separated by 1,200 miles of land may converse over the telephone. The movements of ships and trains and the buying and selling of goods are directed to a large extent by wire. Wireless telegraphy, also, is becoming very important. It is bringing us news of ships in danger, far out at sea.

The post-office.—Letters and other mail matters have been carried by the governments of civilized countries for nearly 400 years. For three centuries the post was looked upon, first of all, as a good way to raise money for government purposes; very high rates were charged, therefore, for carrying the mails. In the nineteenth century, statesmen began to see that the post was very important to business; they began to establish thousands of new post-offices, and to sell postage-stamps cheaper, till to-day the service in most countries is convenient and rapid and cheap.

Fairs.—In countries where the means of communication are poor, it is not easy for merchants to travel to the places where goods are made in order to provide themselves with the wares they sell. It is more convenient to visit some central place where, at fixed times, great collections of goods are offered for sale. This is the reason why large fairs or markets were held for centuries in western Europe, and why they are still neld in Russia, Jerusalem, Mecca, and other cities of Asia. Hundreds of thousands of persons attend the famous fair at Nizhni-Novgorod in Russia, where millions of dollars are paid every year for merchandise coming from all parts of Russia, Siberia, and Central Asia. These fairs lose their importance when railroads, telegraphs, and commercial travelers become numerous.

Weights and measures.—Sellers and buyers can deal justly with one another only when the weight or the measure of the goods sold is known so that the buyer may receive

exactly what he pays for, neither more nor less. Weights and measures must be fixed and unchangeable or trade can not be carried on honestly. Over 80 years ago our Government found that the weights and measures in our custom-houses were not quite the same; Congress, therefore, "fixed the standard of weights and measures," as our Constitution gives it the power to do; since then, weights and measures have been uniform throughout the country.

It is a great convenience when different countries use the same standards, for then they speak the same language as far as weights and measures are concerned. Some bridge-makers in Norway, recently desiring to have iron bridge pieces made for them in England, gave the sizes needed in terms of the metric system of measurements. The English manufacturers asked them to give the sizes in British feet and inches, but the Norwegians declined to do so, and sent their work to Belgium. Most Christian nations now use the metric system of weights and measures which France invented. Our country may, some day, drop its present standards and use the metric system.

Money.—Trade is carried on with barbarous peoples by means of barter, which is the exchange of one commodity for another; thus the Canadian Indians exchange their furs for guns and blankets. But commerce grows beyond the stage of barter, and then a medium of exchange is needed —something which we willingly receive in payment for the goods or labor we sell and with which we may buy whatever its value will purchase. Anything used as a medium of exchange is money. Tobacco in Virginia, codfish in Newfoundland, and hides in California were once used as money; cowrie shells are still used as money in many parts of Africa; such forms of money are too bulky to be easily carried. The best kinds of money are those that may easily be preserved and transported, and that every one readily accepts. Gold and silver have these advantages, and also copper to a smaller extent. They have, therefore, been used as money

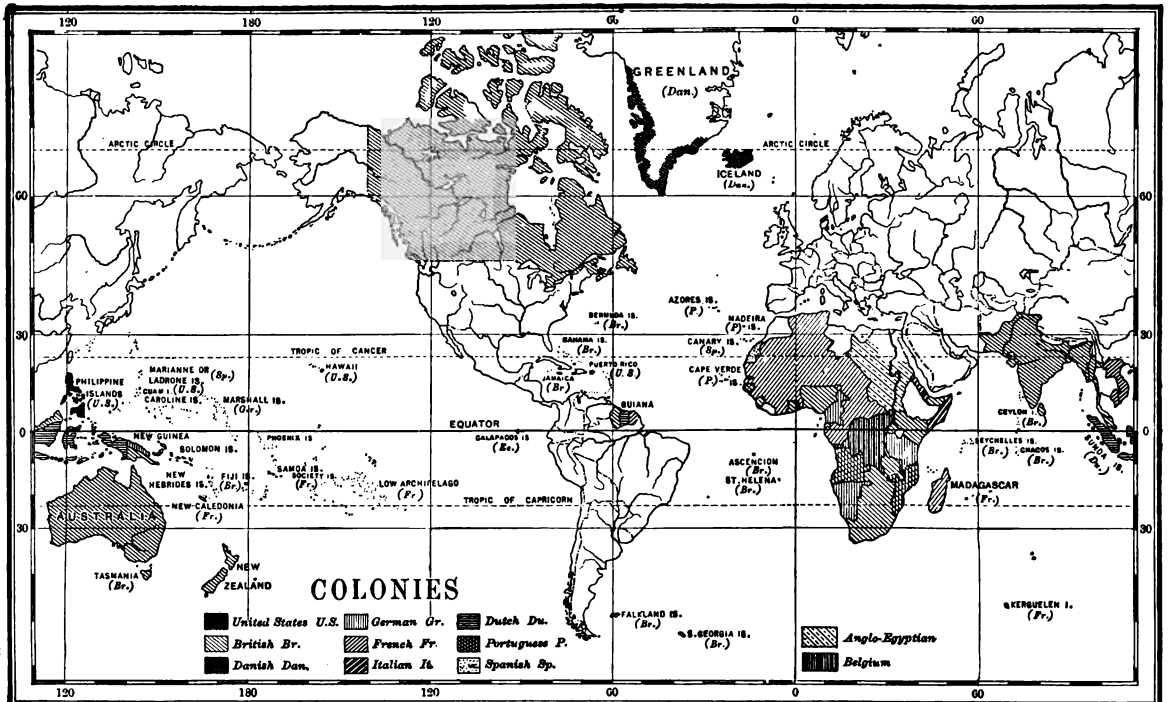

FIG. 16.—Great Britain is by far the largest and richest colonial power. The colonies of Spain and Portugal, once more extensive than any others and including the greater part of America, have been reduced to small dimensions. Holland's large and rich possessions in the Malayan Archipelago make that country a greater colonial power than France, whose most valuable colony is Algeria. Germany did not seek colonies till the best territories had fallen to other nations; her colonies, therefore, are inferior in climates, population, and fertility. The United States had no colonies till the Hawaiian Islands (now a territory), the Philippines, and Porto Rico were acquired.

from early times. The edges of gold and silver coins have long been ribbed or milled to prevent persons from clipping off part of the metal. Gold is the best money in the world because its value is always about the same. Paper money is used for convenience in place of coins, but bank-bills simply represent coin and have value only because the government or the bank issuing them will some day redeem them in coin.

Consuls.—Merchants and manufacturers of one country have large business interests in other lands. Every nation, therefore, sends consuls to many other countries to look after the interests and rights of their countrymen. Consuls send home a great deal of information about the kinds of goods that can be sold and the best way to prepare them for foreign markets.

Colonies.—Many nations possess lands in foreign countries, called colonies. The Philippines and Porto Rico are colonies of the United States (Fig. 16). Colonies are of great value to the mother country in various ways. Nearly all colonies are cheap producers of raw materials, such as tobacco, rubber, ivory, and spices, a large part of which are sent to the mother country; the colonies usually buy more manufactures from the mother country than from any other nation. For these reasons, the European powers have acquired colonies in all parts of the world. Because such products as dyewoods, quinin, spices, gums, and a few others usually come to the great countries from the colonies, they are called colonial products in the trade.

The United States, in 1916, purchased from Denmark three islands in the Virgin Group, West Indies—St. Thomas, St. John and Santa Cruz.

CHAPTER V

THE UNITED STATES

Cereals and the trade in them.

The United States produces the farm crops both of cool and warm climates.—As it is one of the largest countries in the world, extending far into the cool north and also far into the warm south, with great variety of climate, it pro-

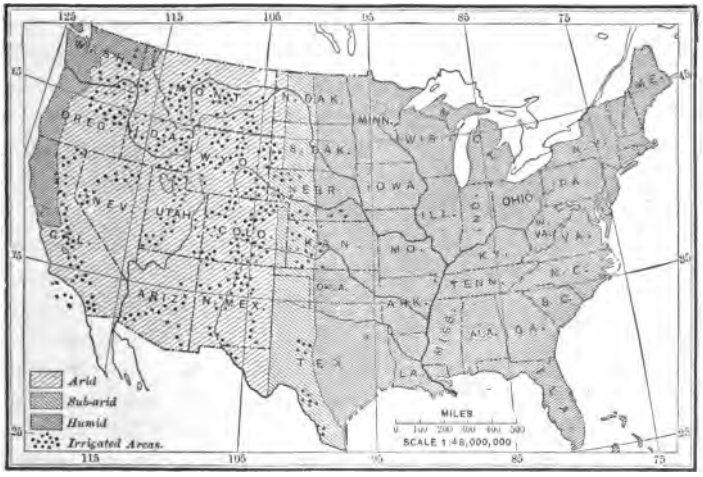

FIG. 17.—Rainfall in the United States.

duces nearly every kind of commodity it needs. This great advantage is possessed only by countries like the United States, Australia, and the Russian and Chinese Empires,

while the smaller countries of Europe must buy from foreign countries large quantities of breadstuffs and meat, as they can not raise all the food they need. They must buy also a great deal of foreign cotton, iron, and other raw substances for their industries, because the home supply is not sufficient or is entirely lacking.

Rainfall.—Good crops require at least 18 or 20 inches of rain, and as only the east half of the United States and a narrow strip along the Pacific coast have abundant rainfall, most of the 6,000,000 farms are in the east half of the country. Observe in Fig. 17 the humid regions where there is plenty of rain for the crops, the subarid zone—a belt of prairie about 200 miles wide—where there is rain enough for crops only one or two years in five; and the arid or very dry regions, where a little farming is possible only by leading water from streams or wells over the neighboring lands (irrigation). Most of the people live in the humid regions.

FIG. 18.—The world's crop of cereals in million bushels (average of three recent years).*

Farm crops.—All the vegetable products raised on farms or in gardens were once wild plants. By centuries of cultivation they have been greatly improved in size and in all qualities that make them useful to man as food. America gave maize, the potato, the tomato, pumpkin, and tobacco to the world. These and some other plants were not known in Europe till the explorers of the

* These are the great cereals of the temperate zones. Rice is the great cereal of tropical and sub-tropical regions. Millet, buckwheat, and other cereals are raised in far smaller quantities.

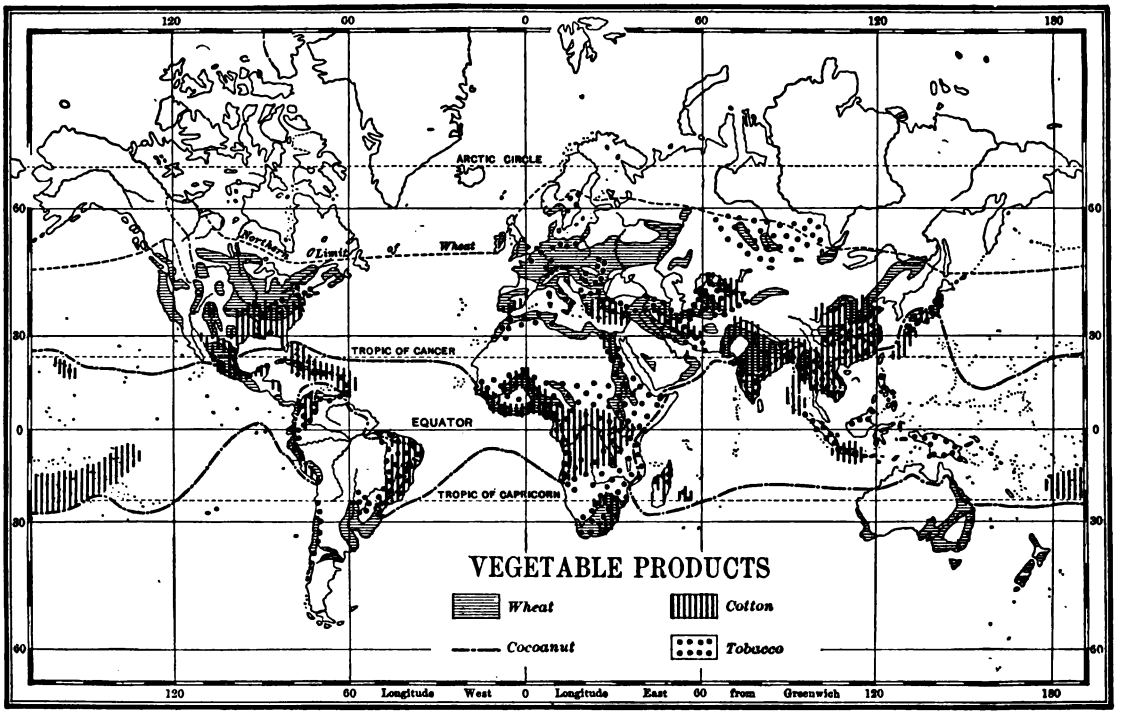
120
60
0
60
120
180
ARCTIC CIRCLE
Northern Limit of Wheat
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
VEGETABLE PRODUCTS
Wheat
Cotton
Cocoanut
Tobacco
Longitude West
Longitude East
from Greenwich

FIG. 19.

western world took them across the sea. The cereals have come from useful wild grasses whose seeds, enlarged and improved by tillage, are now the vegetable food of greatest importance, and hence the largest product of the farms in every country (Fig. 18).

The United States is the leading producer and exporter of cereals and the chief source from which Europe derives its foreign breadstuffs.

Wheat.—Wheat, which is more widely distributed over the world than any other grain except barley, is the most important of all the cereals (Fig. 19). Wheat contains more nutriment than any of the other cereals, and is therefore the most valuable as an article of food. It thrives in all temperate climates, in southern Russia as well as in Argentina, and in very warm countries, of which northern India is an example, the crop is grown in winter instead of summer. Indeed, so general is the growth of this grain that farmers are cutting it in some parts of the world every month of the year. The Australian farmers export their wheat half round the world to Europe, and, in spite of the cost of transportation, they find this profitable, as they harvest their crops in the European winter when the price of wheat is highest.

Fig. 20.—Wheat crop in million bushels (average of three years, 1905–7).

As it is the chief grain eaten by the white races, who lead and make the world's commerce, the trade in wheat is larger than in any other cereal.

The use of wheat as an article of human food is now growing in India, China, and Japan and other rice-eating countries, while in France, where

forty years ago the peasants ate rye bread, the use of wheat flour has become general.

Our country raises nearly one-fifth of the wheat crop of the world (Fig. 20). It is grown everywhere, from the Atlantic to the Pacific, but the rich level prairie lands

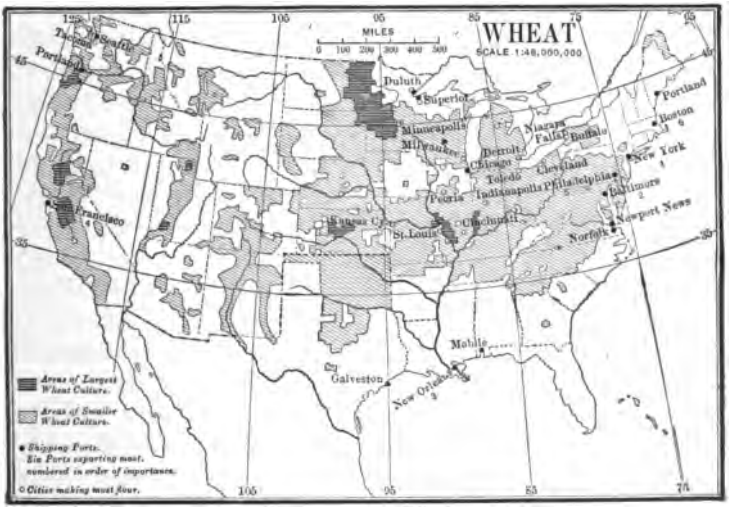

Fig. 21.—Observe the chief wheat-shipping ports and the cities producing most flour. While wheat is grown in many States, the areas of largest production are comparatively small. Eastern farm-lands can not now compete in wheat-raising with the low-priced prairies of the Northwest. The plump kernel winter wheat is grown in the Central and Southern States. Hard spring wheat of the upper Mississippi Valley, the wheat of export, is the best for many purposes; its price regulates the world's wheat markets and it makes the best flour.

The railroads carrying most of the great wheat crop of the Central West converge mainly upon Chicago, Minneapolis, Duluth, Superior, St. Louis, and Kansas City.

which extend from Minnesota and the two Dakotas to Kansas produce the most of it (Fig. 21). From this region it is sent in great quantities to our northeastern, southern, and Rocky Mountain States, which do not raise enough for their own needs. Many kinds of labor-saving machines, like the grain-drill, and the combined steam harvester and

thrasher, have been invented and are used to cheapen the cost of producing and marketing the crops. To such completeness has the system of transporting and storing wheat been carried that it is not handled except by machinery from the time the farmer hauls it in bags to his market town.

Export wheat.—The wheat which is sent out of the country, generally called export wheat, is carried by rail or by steamers which travel on the Great Lakes or up and down the Mississippi to the seaports of the Atlantic, the Pacific, and the Gulf of Mexico. To such a science has transportation been reduced that a bushel of wheat from the North Dakota fields can be delivered at Liverpool at a cost of only 20 cents for freight. Cheap production, therefore, by reason of the low price of our prairie lands and the richness of the soil, combined with the many American inventions for cheap handling and cheap transportation, make it impossible for British and German farmers on their high-priced lands successfully to compete with our wheat. Nearly all the wheat exported by us as well as by other countries finds its way to Europe, which is unable to raise enough for its own consumption, in spite of the fact that it produces

FIG. 22.—EXPORT WHEAT IN BAGS.

250,000 bushels of wheat at Portland, Ore., in bags ready for shipment. Wheat is exported in bulk (loose) from Atlantic, and in bags from Pacific, ports.

itself half of the wheat of the entire world. Russia, Austria-Hungary, and the Balkan States have great wheat regions which supply their own needs, but all the other European countries purchase from foreign lands. Of these, Great Britain buys far more than all other countries together. Fleets of steamships, laden with wheat, are constantly leaving our ports for Europe, and it is from the United States that the most important supplies of this cereal are received (Fig. 22), though the rich black-earth lands of southern Russia, the irrigated fields of north India, the broad plains of Hungary, the pampas lands of Argentina, as well as the small, scattered wheat areas of Australia, send additions for the needs of Europe. The wheat routes across the oceans may be traced on Fig. 1. The United States crop is now about 700,000,000 bushels a year.

Wheat flour.—In former times wheat was ground between two millstones, and was reduced to flour by this simple operation. The grain is now run through several sets of porcelain or chilled iron rollers, being gradually crushed by a number of grindings and other processes which remove all the bran. The flour thus made is much superior to the old product. Minneapolis, on the Mississippi at the Falls of St. Anthony, is the greatest flour-milling city in the world. Its elevators hold millions of bushels of grain collected from the wheat lands near by, its mills run night and day, and a single mill often turns out over 100,000 barrels of flour in a week. About one-third of our entire export of wheat has been in the form of flour since the new milling processes were introduced. The tropical and Oriental countries buy much more flour than raw wheat, as they have few flour-mills, and those they have are poor and old-fashioned. Great Britain buys more than half of the flour sent out of the United States.

Maize.—The discoverers of America found the Indians cultivating and eating a cereal not known in Europe. The Spaniards called it maíz (maize), that being its native

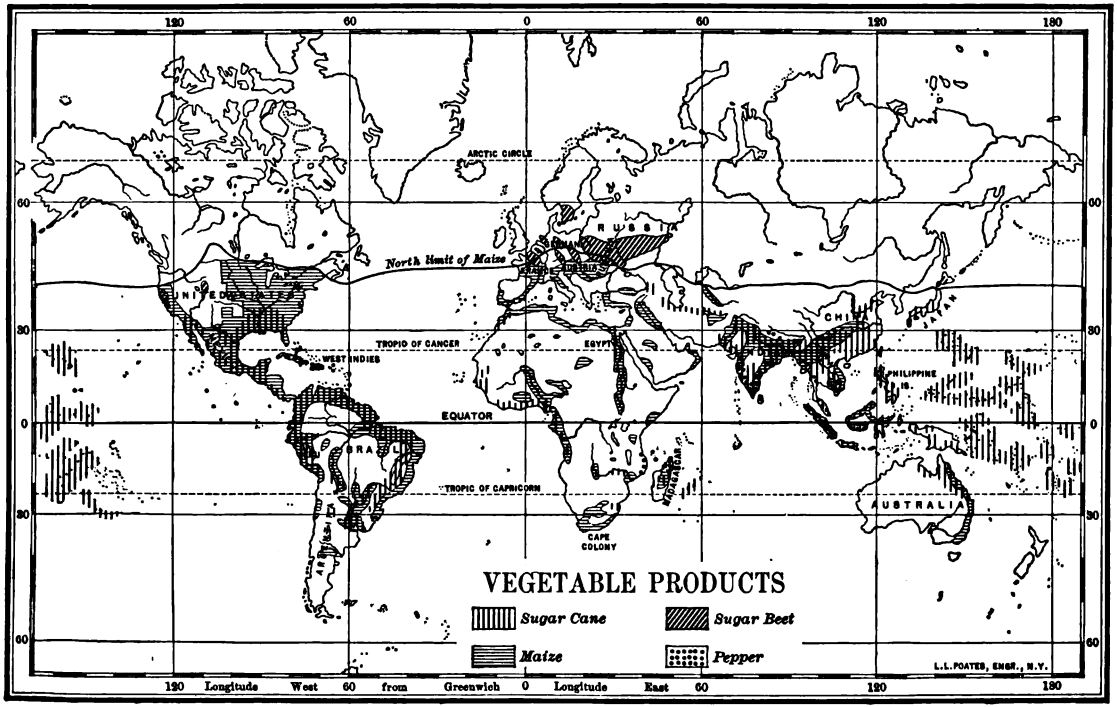
VEGETABLE PRODUCTS
Sugar Cane
Sugar Beet
Maize
Pepper
ARCTIC CIRCLE
North limit of Maize
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
WEST INDIES
EGYPT
CAPE COLONY
PHILIPPINE IS.
AUSTRALIA
L. L. POATES, ENGR., N.Y.
120 Longitude West 60 from Greenwich 0 Longitude East 60 120 180

FIG. 23.

name in the West Indies; the English called it Indian corn. Maize is now cultivated wherever the summers supply it with all the warmth and moisture it needs (Fig. 23). It ripens even in parts of southern Canada, where the long, hot summer days mature it before frost comes; but the climate of all north European countries is too cool for maize, though it grows in all south European lands.

Maize is our largest cereal crop. If the whole of England and Scotland were one great corn field, this territory, great as it is, would not cover the land devoted to raising maize in the United States. Four States west of the Mississippi—Nebraska, Iowa, Kansas, and Missouri—and three between this river and the Ohio River—Ohio, Indiana, and Illinois—raise the larger part of our maize. These States are known as the Corn Belt; and although they deserve the name from the enormous crop, it is worth remembering that another billion bushels of corn per year are raised in other parts of our country. Nearly three bushels of corn are raised in the United States for every bushel that is grown in all other lands (Fig. 24). Our crop is now over 3,000,000,000 bushels a year.

FIG. 24.—Maize crop in million bushels (average of three years).

Maize contains a larger proportion of fats than any other cereal, and is the best grain for fattening cattle and swine. This is its chief use, though all the peoples who raise the grain eat a great deal of it; thus sweet corn, corn bread, and hominy are eaten everywhere in the United States, and polenta (Indian-corn mush) is the basis of food for the Italian peasantry. The Rumanians sell their higher-

priced wheat and eat maize, but the nations which import maize feed nearly all of it to their live stock. A large part of our great crop is fed to hogs and cattle, and thus converted into pork and beef; in other words, most of the maize we export is not sent across the ocean in the form of grain, but in the condensed form of meats, which is a very profitable way of selling the maize crop.

Maize exports.—Our total exports of the grain are worth only about one-third as much as our wheat and flour shipments. The reasons for this are interesting. In the first place, the price of a bushel of maize is usually less than half that of wheat, but it costs as much to carry the maize as the wheat. Two bushels of maize landed in England are not worth more than one bushel of wheat, and it costs twice as much to transport maize as the same value of wheat. Then the importing countries use very little maize for human food, while they require enormous quantities of our wheat and wheat flour for bread. At the same time, all the countries of northwest Europe, which can not grow maize, need this superior fattening grain to feed to the animals they kill for food. These countries and Canada, which can not raise enough for her live stock, buy nearly all the maize we sell, Great Britain taking almost half of it. Rumania, Italy, Russia, Argentina, and Egypt send much smaller quantities to north Europe; very little is sold in other lands.

These facts and the study of the distribution of maize culture in Fig. 23 show that the Atlantic and the Mediterranean are the great highways for maize exports.

Oats.—The world usually raises more bushels of oats every year than any other cereal, most of the crop being used for horse-feed. Each bread-eater consumes about 4½ bushels of wheat in a year; a working horse, if well fed, eats about 2 bushels of oats in a week. Nearly the whole crop is grown in north Europe, Austria-Hungary, the United States, Canada, and Siberia (Fig. 25). Our coun-

try, producing one-fourth of the crop, raises oats in every State, but the grain thrives best in a cooler and moister climate than wheat requires, most of it being raised a little north of the chief wheat regions. The Irish and Scotch eat oat-cake and oatmeal porridge, the importance of the grain as human food in all countries increasing with the larger consumption of prepared cereal foods. Most of our export oats and oatmeal are sent to Europe. We raised over 1,500,000,000 bushels of oats in 1915.

FIG. 25.—An average oats crop in millions of bushels.

FIG. 26.—An average rye crop in millions of bushels.

Rye.—Rye is cheaper than wheat and not so nutritious, but it is the chief breadstuff among the peasantry of Russia and Germany, which grow more than two-thirds of the crop (Fig. 26). As it thrives on the poorer soils, it is a large crop on the great sandy plain of north Germany. It is not, however, very important in America, where much is used in distilling rye whisky. Our small exports go almost entirely to northwest Europe, and our crop was about 49,000,000 bushels in 1916.

Barley.—Barley is most used for beer-brewing, though north Europe grinds some of it for bread or feeds it to horses. No other cereal thrives in so many different climates, barley fields being found from Norway to Algeria. Russia is the largest grower and exporter; the crop in Great Britain and Germany, where beer-brewing is a very large industry, is almost as important as that of wheat. We send to north Europe all the barley we do not use ourselves in the manufacture of beer. Our crop, 1916, 181,000,000 bushels.

Fig. 27.—Barley crop in million bushels (average of three years).

Buckwheat.—This grain has long been a declining crop in the United States, where it is grown chiefly in New York and Pennsylvania, and is used for buckwheat cakes. Our acreage was twice as large thirty-five years ago. Russia, France, and some Alpine districts raise most of it; our small exports go to north Europe.

Rice.—Rice is the main food resource of half the population of the world. Most of the people of India and of southeast Asia and its islands make rice their chief food. Observe in Fig. 28 that this grain is grown wholly in tropical or warm regions, and that its culture is confined to a great many areas, most of which are rather small, though the aggregate acreage is even larger than that of wheat. The reason for this patchy distribution of rice is that it thrives only where there is a great deal of water with which the fields may at times be flooded by means of irrigation ditches. Its cultivation is therefore restricted to lowlands, river valleys, and deltas where the fields may be flooded. After the grain is thrashed it is called paddy, being still

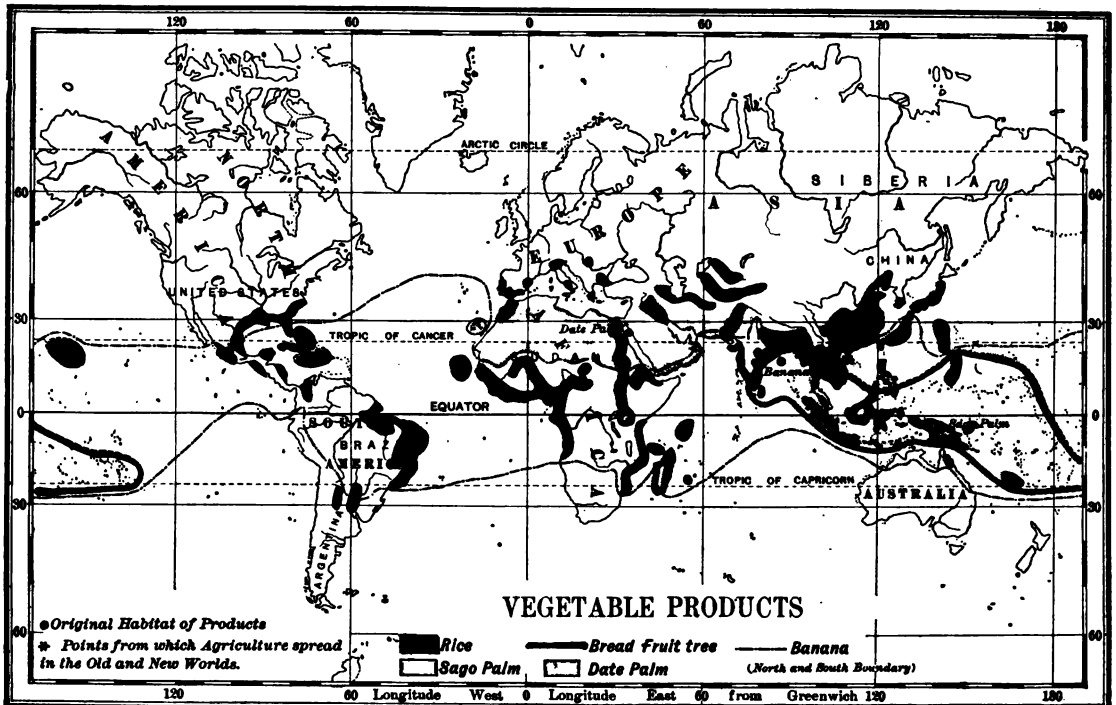
VEGETABLE PRODUCTS
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
UNITED STATES
SIBERIA
CHINA
AUSTRALIA
Date Palm
Banana
Sago Palm
●Original Habitat of Products
✱ Points from which Agriculture spread in the Old and New Worlds.
Rice
Bread Fruit tree
Banana
(North and South Boundary)
Sago Palm
Date Palm
120 60 Longitude West 0 Longitude East 60 from Greenwich 120 180

FIG. 28.

enclosed in the inner husk. After this husk is removed by machinery the white grain is the rice of commerce.

Our southern coastal plain, chiefly in Louisiana and Texas, produces about one-half of the rice we consume. Our rice-growers are introducing better machinery for cultivating, thrashing, and grinding rice, and are substituting the pump for natural irrigation. These improvements encourage rice-growing.

Rice exports.—Most of the rice is consumed in the countries where it is grown; it is therefore not so important as an export crop as some other grains. It is forbidden by law to export rice from China, the largest producer, because the Chinese need all they can raise. The paddy fields of Burma supply most of the markets of the world with rice, the shipments, swelled by smaller supplies from Siam, Cochin-China, and Java, moving west through the Suez Canal to Europe and America. Rice moves east from Cochin-China and Java to supply the deficiency of China and the Philippines, and from Hawaii to our Pacific coast; but the great rice movement is from the East to the West.

Millet.—One of the grasses whose seed yields a very nutritious flour is millet. It is grown in the United States and Europe chiefly for hay, but the seed is the chief food of many millions of people in India, China, Japan, and some other Asiatic countries. It thrives in the drier regions of the interior where rice will not grow; thus more millet than rice is eaten on the uplands of inner India, while rice is the chief food along the coasts and in the irrigated valleys. Millet has little importance as an export crop.

Summary.—The facts in this chapter show that, among all the cereals, wheat has overwhelming importance in the export trade; that maize is exported chiefly in the form of meat; and that the cereals of the temperate zones have far more importance in the export trade than those of the warm climates which are consumed chiefly at home.

CHAPTER VI

THE UNITED STATES—(*Continued*)

Other vegetable food products, beverages, tobacco, and the trade in them.

Utilizing vegetation.—The more that plants are studied the more uses are found for them. Many marshy places in the North are covered with sedge that was supposed to be worthless, but sedge was found to supply an excellent fiber from which twine, rugs, and other things are made. The useless sedge is now a source of wealth, because the valuable thing in it has been discovered.

Many barks, roots, gums, and juices supply millions of dollars worth of products every year. Ipecac and sarsaparilla, yielding drugs; the sugar-beet, supplying sugar; and manioc, from which tapioca is made—are among the roots that furnish chemicals, drugs, or food; they have therefore a place in commerce. The bark of an oak-tree supplies corks; witch-hazel and cinchona (quinin) barks furnish medicines; hemlock bark is used for tanning leather; many other barks have a place in trade because their usefulness is now known. Camphor is distilled from the wood of the camphor-tree. The juices of various trees yield turpentine, resin, tar, or rubber. We can not say that any plant is useless; if it seems so it may be only because we have not learned how to use it. This chapter will tell of the uses of some other important plants.

Sugar.—The nutritive value and enjoyable flavor of sugar make it a desirable food. As about 11 million tons are consumed every year, sugar-making is one of the great indus-

tries. The English-speaking peoples consume more sugar than any others. Each of us eats about 75 pounds a year, the United States leading the world as a sugar-consumer. All the wheat we sell to other lands does not pay for the sugar we buy from them.

Most sugar is made from the juice of the sugar-cane or sugar-beet. For three centuries nearly all of it was made by slave labor from sugar-cane in the hot regions of the West Indies and South America. Then a wonderful change occurred. It was found, seventy years ago, that sugar might be made from varieties of the beet growing in tem-

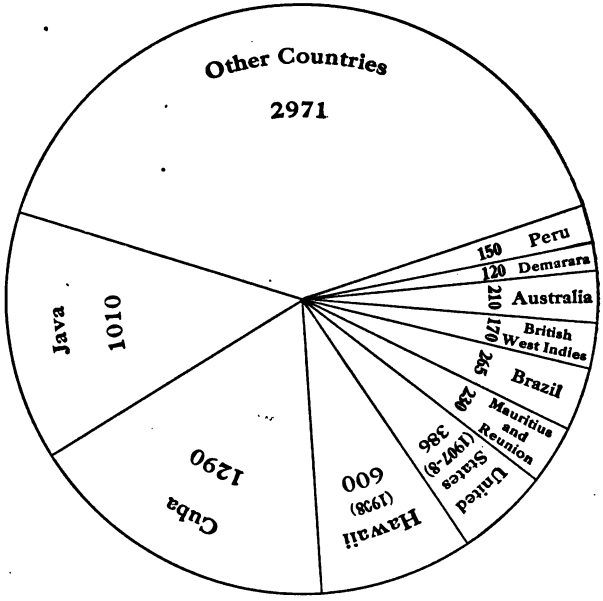

FIG. 29.—AVERAGE CANE-SUGAR CROP IN TWO YEARS (1905–6).
In thousand tons.

perate climates; in 1902 the beet supplied three-fifths of all the sugar. Some interesting facts are now observed: Cane sugar is again on more than even terms with beet sugar

in total amount of production; but the increase in the supply due to the sugar-beet has reduced the price one-half in thirty years; sugar is no longer made by slave labor.

Cane-sugar.—Sugar-cane (Fig. 23) thrives in our Southern States near the Gulf of Mexico, Louisiana producing the largest crop; but other lands yield far greater supplies, Cuba, Java, and Hawaii being most important (Fig. 29). Sugar-cane planters made fortunes till cheap beet-sugar invaded the markets. Many islands, as Reunion, Mauritius, and Barbados, raising little but sugar-cane, have suffered severely from this competition. It is not wise to depend upon one product alone; there is great distress if the single industry upon which a people rely is crippled.

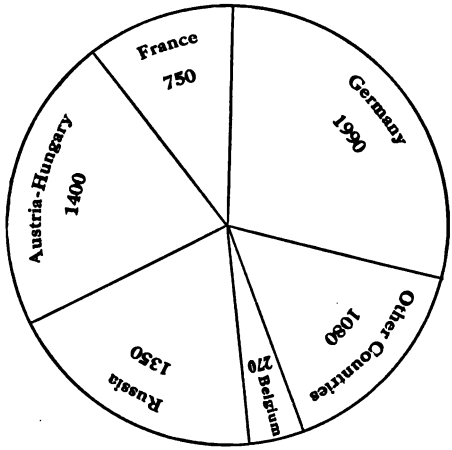

FIG. 30.—BEET-SUGAR CROP IN YEAR 1908-9.
In thousand tons.

Beet-sugar.—The sugar-beet thrives in our Northern States, and, though the industry is new here, already supplies about two-fifths of the sugar we make. The largest producers are California and Michigan. North and central Europe make most of the vast supply of beet-sugar (Fig. 23). Sugar is so nutritious that Germany makes nearly as much in war as in peace times, and is the largest grower, France, Austria, and Russia following as very large producers (Fig. 30). One advantage of the sugar-beet is that dairy-farming thrives wherever it is raised, beet-tops and pulp being excellent fodder for cattle.

Sugar-making.—The juice of the cane is obtained by crushing the stalk between rollers, that of the beet by slicing the root or reducing it to pulp by machinery and then pressing it or soaking it in warm water with which the juice mingles; the water is then evaporated and the sugar crystallizes. This is raw sugar, brown or yellow in color, made on the farm.

Raw sugar is sent in bags or hogsheads to refineries, where it is purified, and is white when ready for market. Most sugar is refined in large establishments that turn out an enormous product. The refineries in our large seaports draw upon all sources for raw cane-sugar, and also buy a part of the raw beet-sugar of Europe.

Molasses.—A small part of the sugar does not crystallize, but forms a sirup that is prepared for market on the plantations (West Indies or New Orleans molasses) or in refineries (sugar-house molasses or sirup).

Maple-sugar.—The sap of the sugar-maple yields maple-sugar, produced mostly in Vermont, New York, Pennsylvania, Ohio, and Canada. It loses its peculiar flavor if refined. It is decreasing in supply, as many maple groves are being cleared for farming purposes.

The trade in sugar.—Sugar is the largest import into the United States, the only leading nation that still consumes more cane- than beet-sugar. All the raw cane-sugar of Hawaii, most of the West Indies supply, and a great deal from South America, chiefly Brazil, are sent to our refineries, while the sugar islands of the Dutch East Indies also swell the receipts. All the greatest cane-sugar routes converge upon the United States, excepting two, one of which is from the West Indies to England and the other from the Dutch East Indies to the Netherlands. England buys most of the export beet-sugar, being the great foreign market of the neighboring producers.

Vegetables.—Vegetables are too bulky and heavy in proportion to value to have a great part in international trade

except between neighboring countries. The largest movement is from the warmer to the cooler regions, our Southern States, for example, sending garden truck to the North before vegetables mature there; for the same reason we buy early potatoes and onions from Bermuda; Algeria sends many shiploads of vegetables to France. Gardening is a large industry near cities; growers as far away as Florida contribute to New York vegetable markets. Germany raises more potatoes than any other country. This

FIG. 31.—Potato-field in Colorado.

is the most important vegetable; it is a larger part of the food of the German and Irish peasantry than of any other people (Fig. 31). England imports millions of dollars worth of beans and peas. Latin-American countries have a large trade in the black bean (frijole), a staple food there.

Fruits.—Fast transport and cold storage make it possible to send fresh fruits long distances. England receives fresh grapes from Cape Colony and peaches from New Zealand by the time its own fruit-trees are budding. California sends fruits to compete with the grapes, pears, and peaches of the Atlantic coast. The fruits of warm countries, such

as the orange (Fig. 32), lemon, banana (Fig. 28), and pineapple, are sent by shiploads to cooler countries; also dried fruits of warm climates, as currants, raisins, dates (Fig. 28),

FIG. 32.—Orange grove in southern California.

and figs; and the pickled fruit of the olive-tree which grows in Mediterranean lands. Apples, most important in the export trade of cool countries, are one-third of our fruit exports.

Some tropical foods.—Some other food products of tropical countries are important in commerce. Sago, a mealy food prepared from the soft inner portion of the sago-palm, is a staple article of diet in hundreds of islands where it grows (Fig. 28). Northern countries import it as a table delicacy. Tapioca, used in puddings, is prepared from the starch of the manioc-root, which is the chief food of millions of people in tropical America and Africa. It is

brought to us from Brazil, Africa, and the East Indies. Arrowroot, esteemed as food for infants and invalids, comes to our ports from the West Indies and South America. Breadfruit is the fruit of a tree growing in the South Seas, where it is a large article of food; roasted, it is similar to bread in flavor (Fig. 28).

Nuts.—If all other sources of food were cut off, the most of mankind could support life on nuts. Many Italian peasants subsist almost wholly on boiled chestnuts, which are also important as food in France. In uncivilized countries nuts are a large food resource. The cocoanut palm, fringing many warm seacoasts, loves the sea and does not thrive far from it. Under the large leaves at its top grow bunches of nuts which are the daily food of millions of people in the East Indies and the Pacific. Our bakers and confectioners buy large quantities. The meat of the cocoanut, dried in the hot sun, is called copra and is sent to many ports, where the oil is pressed out and used to make soap. Observe in Fig. 19 that the cocoanut grows in the south of Florida, half of our supply coming from that State. About two-thirds of the almonds we eat are grown in Florida, the Mediterranean countries supplying the remainder. Our Southern peanuts fill the home demand. African and East Indian peanuts (ground nuts) are sent by the thousands of tons to Marseilles, where the oil is expressed and used for soap-making and a substitute for olive-oil. Brazil nuts from Brazil and walnuts and filberts from Europe are imported in large quantities. So it is easily seen that nuts are quite important in commerce.

Spices.—Most spices come from islands of the Malayan Archipelago, and are shipped from Singapore. About half the total trade is in black and white pepper (Fig. 23). The home of red peppers (Chile and Cayenne peppers) is South America, but they are now grown in many hot countries. Cinnamon, the aromatic inner bark of the cinnamon-tree, is dried in the sun and exported from Ceylon and Java.

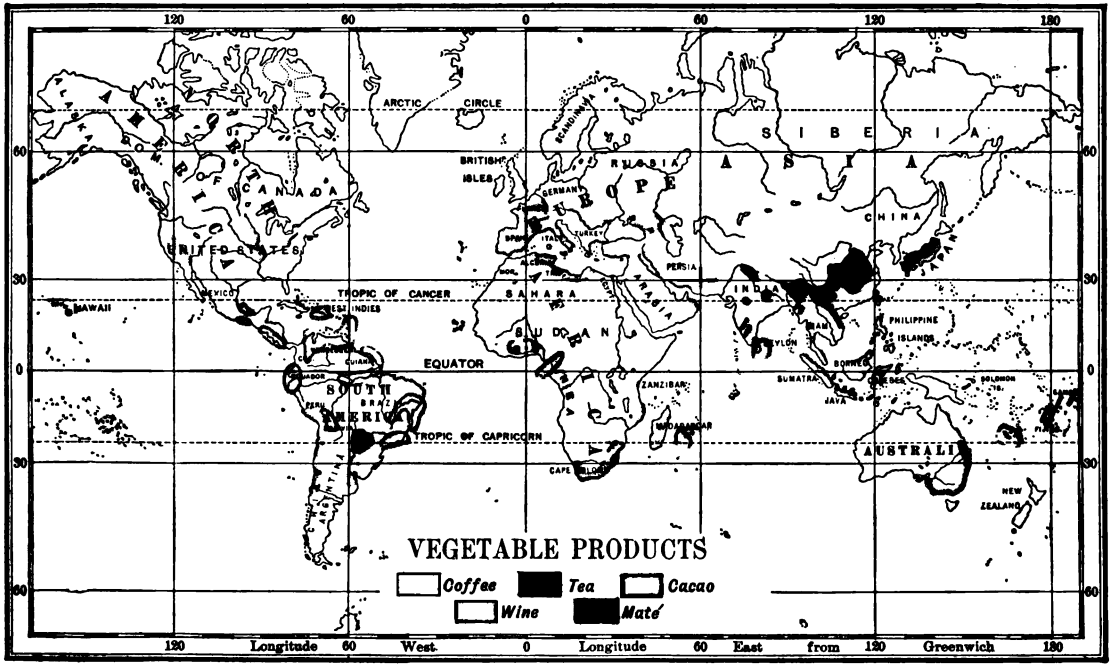
VEGETABLE PRODUCTS
Coffee
Tea
Cacao
Wine
Maté
Longitude West from Greenwich
Longitude East from Greenwich
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
CANADA
UNITED STATES
MEXICO
HAWAII
WEST INDIES
SOUTH AMERICA
BRAZIL
PERU
GUIANA
ECUADOR
ARGENTINA
BRITISH ISLES
GERMANY
RUSSIA
SCANDINAVIA
TURKEY
PERSIA
SAHARA
SUDAN
ZANZIBAR
MADAGASCAR
CAPE COLONY
SIBERIA
CHINA
INDIA
CEYLON
BURMA
PHILIPPINE ISLANDS
BORNEO
SUMATRA
JAVA
CORAL SEA
SOLOMON ISL.
AUSTRALIA
NEW ZEALAND

FIG. 33.

Much of the so-called cinnamon sold in our stores is a coarser variety (cassia) grown in China. The nutmeg is the kernel of a fruit growing mainly in the Banda Islands; its fleshy covering is the mace of commerce. The United States is the largest customer for cloves, the dried buds of the clove-tree, most of which comes from the islands of Pemba and Zanzibar, near the east coast of Africa. Pimento or allspice, the berry of an evergreen tree, is shipped chiefly from Jamaica. The best ginger is grown in Jamaica, but large supplies also come from India, China, and West Africa, ginger ranking next to pepper in importance.

FIG. 34.—Gathering coffee in Brazil.

Coffee.—The roasted coffee bean (Fig. 33), ground and boiled in water, makes one of the most widely used beverages in North America and north Europe. About three-fifths of the crop comes from plantations in Brazil. The United States is the greatest coffee-drinking country, nearly ten pounds being annually consumed here for every man, woman, and child in the country. By far the largest stream of coffee exports flows north from Brazil; the stream divides in the Atlantic, three-fifths of it coming to the United States and two-fifths going to the ports of England and the North Sea. Another large stream flows from Java and Sumatra, is swelled by smaller supplies from India and Arabia (Mocha), and passes through

the Suez Canal and on to north Europe and the United States (Fig. 34).

Tea.—About one-half of the human race drink tea (Fig. 33), the dried leaf of the evergreen tea-bush, which is cultivated mainly in parts of India and southeastern Asia, where there is abundant rain. It is a garden crop in China, the largest producer, where the leaf is cured by hand. The various kinds of tea are due to differences in the size of

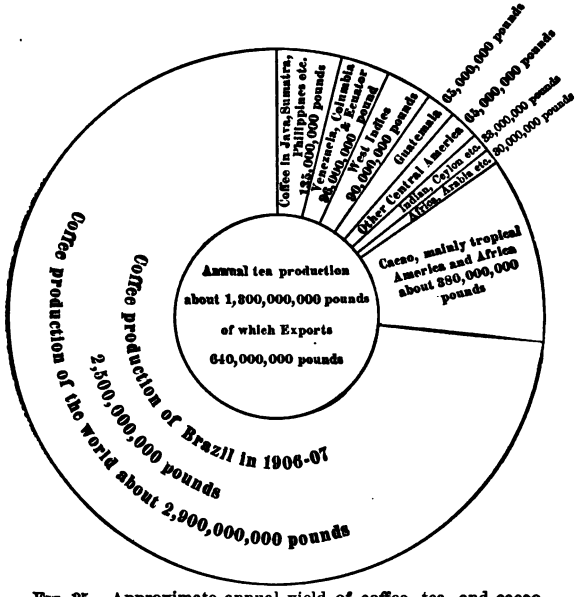

FIG. 35.—Approximate annual yield of coffee, tea, and cacao.

the leaf, the season of picking, and methods of preparing and mixing. The best Chinese teas are kept at home for the consumption of the wealthy. Russia buys enormous quantities of fine leaf, which is carried on camels by thousands of tons to Siberia, where it is transported by wagon or rail to the Russian markets. Russia also buys inferior teas pressed into bricks (brick-tea). The large plantations of India and Ceylon permit the use of machinery in tea-

curing, which is an advantage. Black tea is the chief product, as it is preferred by British consumers. Green tea is a great export from Japan and Formosa, three-fourths of the crop being sent to the United States, which prefers green

FIG. 36.—The cacao-tree and its fruit.

tea. As nine-tenths of the export tea is consumed by English-speaking peoples and Russia, the tea routes are by sea to the British Isles, North America, Australia, and South Africa, and by land to Central Asia and Russia. Much of

our tea crosses from Japan and China to the Pacific coast ports (Fig. 35).

Cacao.—Ecuador, São Thomé and Brazil supply most of our cacao (Fig. 33), but Africa is a growing source. Chocolate is made by roasting, crushing, and flavoring the large nutritive seeds that are embedded in the fruit of the cacao-tree (Fig. 36). The decoction cocoa, made from the dried and powdered seed kernels, is a wholesome and nutritious drink, valued in many lands, and regarded in Spain as second only to wine. Chocolate and cocoa are manufactured in the United States. Their use is rapidly extending.

Maté.—Yerba maté (the maté herb, also called Paraguay tea) is a shrub growing wild in the forests of Paraguay and in neighboring districts of Brazil (Fig. 33). The stimulating decoction, made from the withered leaves, is drunk without sugar. It is regarded as an excellent substitute for tea, and is a large article of commerce in Paraguay, Argentina, Uruguay, Peru, and Bolivia.

Wine.—There are other beverages containing sugar or starch which, by fermentation, are changed into alcohol. Wine, the most important among them, is the fermented juice of the grape, the common beverage of France and south Europe, where the cheapest qualities are sold for a few cents a gallon. France is the greatest wine land in the world, followed by Italy and Spain (Figs. 33 and 109). Our country produces most of the wine it consumes, California supplying half of it, with New York, Ohio, and some other States yielding large supplies.

Europe and the Orient buy California wine, but we import far larger quantities of the European vintages, half of the imports being champagne from France. Though France is the greatest wine-producer, she imports more than any other country, partly on account of her immense consumption and also because she buys much Spanish and Algerian wine to mix with her cheaper qualities. Great Britain, unable to raise the grape, is the second largest im-

porter, buying four times as much foreign wine as we import. Most of the export movement is from the Continent of Europe to all parts of the world.

Beer.—Germany was the largest producer of beer, the United States was second, and Great Britain third. Beer, the most common alcoholic beverage north of the wine lands, is made from barley which is changed into malt by the partial germination of the seed converting the starch into sugary matter; hops and water are added, and the mixture is fermented. Each northern country makes nearly all the beer it consumes, the quantity it imports being very small in comparison with its production. The amount of beer produced is nearly twice that of wine.

Distilled spirits.—The sugar or starch of various fruits, grains, and vegetables may be converted into alcohol by fermentation, the alcohol being then extracted by distillation. Germany and France use enormous quantities of potatoes to make alcohol, which every year is becoming more useful in the industries as fuel for engines, an illuminant, and for other purposes. Alcohol is the intoxicating part of all fermented and distilled beverages. Brandy is distilled from wine or fruits, the largest quantity being produced in southwest France, which sends us nearly all our imports. Whisky is distilled mainly from fermented rye and maize; rum from the fermented juice of the sugar-cane in the West Indies, or molasses in New England; and gin from various grains flavored with the juniper-berry.

Hops.—The chief use of hops is in beer-making, the crop being grown largely in north and central Europe and the United States. England and Germany raise half the crop. We import German hops but export three or four times as much of our domestic product to England.

Tobacco.—The United States is the largest grower of tobacco, which has a very wide range, being raised in both the temperate and the torrid zone (Fig. 19). The various qualities are due to differences in climate and soil. The

leaf known as Havana tobacco, grown solely in the west part of Cuba, is famous for its distinctive aroma, and is used only for cigars; the mild tobacco of Europe is best adapted for the pipe; the best tobacco of the Philippines, grown in the north of Luzon, makes cigars that are as popular in the Orient as Havana cigars are in the West; Sumatra's fine, bright leaf is imported to our country for cigar wrappers; Turkey's yellow leaf with a peculiar aroma is most used in cigarettes. India is the second largest producer (Fig. 37).

FIG. 37.—A tobacco-field.

Our country grows tobacco in many States (Fig. 37 A). Most of the leaf used for cigars is grown in the Northern States; most of the smoking, chewing, and cigarette tobaccos are grown and manufactured in the larger tobacco area, which extends from Kentucky to Virginia, and from central Ohio to North Carolina. As tobacco is very valuable in proportion to bulk and weight, its owners can afford to pay freight charges on it for long distances; so the raw leaf is sent all over the country to thousands of large and small factories, where it is turned into cigars.

The United States is the largest exporter of tobacco, most of it going to Europe in the form of unmanufactured leaf. Few cigars are exported. Our purchases of Havana

leaf and cigars, Sumatra leaf, and Egyptian cigarettes are so large that the imports into this country are greater than the exports. England is the largest importer of tobacco, nine-tenths of its supply coming from the United States.

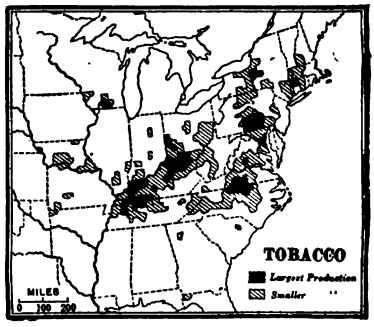

FIG. 37 A.—Tobacco in the United States.

All countries derive large sums of money to support the government by placing a high tax on tobacco; some countries, as France and Spain, permit no one to manufacture tobacco unless a large price is paid to the government for the privilege. This is called a government monopoly.

Opium.—The juice obtained by pricking the seed vessel of the white poppy, after being dried, is the opium of commerce. It is used chiefly as a narcotic, inducing sleep or stupor. Opium is a government monopoly in India, where immense quantities are grown to sell in China to the millions of persons smoking it. In 1906 China prohibited the cultivation of opium in the Empire and adopted measures gradually to abolish the practice of opium smoking. These measures are due to the injurious effects of the drug.

Hay.—The value of the hay grown in the United States is equal to that of the wheat crop. Very little is exported. Timothy, clover, alfalfa and other cultivated or wild grasses are cured for winter provender. Alfalfa is adding greatly to our supply of hay and grazing. When it grows well it yields twice the value of hay per acre that clover or timothy produce. It increases fertility by adding nitrogen to the soil, thrives best in irrigated valleys from Kansas to Oregon, does well in our Southern and is increasing in our Eastern States.

CHAPTER VII

THE UNITED STATES—(*Continued*)

Animals used for food and some other animal products.

Domestic animals raised for food.—Cattle, hogs, and sheep provide most of the world's meat-supply (Fig. 10). We do not see many cattle and sheep grazing on the farms near our cities because land there is too costly to be devoted to large grass- and hay-crops; cheap pasture lands are required where cattle- and sheep-raising are the largest industries; plenty of cheap maize or other fattening food is also required to prepare cattle and hogs for market. This is the reason why the United States, with its wide-spreading prairies and plains and its great corn belt, is the largest source of meat-supply in the world. The other largest sources are the downs of Australia and the pampas of South America. A large part of densely peopled Europe depends upon these three sources for most of the meat it imports. Crowded Japan can produce very little meat.

Preserving meats.—It would not be worth while to carry meat thousands of miles to market if it could not be kept from spoiling. The most common practise for preserving it since 1875 has been to chill or freeze the meat (refrigeration) in cars, on shipboard, or in the storehouses where it is kept for sale. Fresh meat sent from the United States to Europe is merely chilled, but it is necessary to freeze it in crossing the tropics from South America or Australia. Before meat was refrigerated, Argentina raised cattle and sheep chiefly for hides, tallow, and wool, the meat being thrown away. Refrigeration has made our

hog-packing season twelve months long; it has also extended the markets for poultry and fish; fresh salmon from the Pacific coast, as an example, is sold in the Atlantic markets.

Meat is also preserved by canning it in air-tight tins, or by salting or pickling it. A great deal of beef in Argentina and Uruguay is pressed to extract the juices, salted, and dried in the sun. This is jerked beef, which is eaten in large quantities in South America and the West Indies.

Cattle.—There are very nearly as many cattle in the United States as men, women, and children (Fig. 38). No

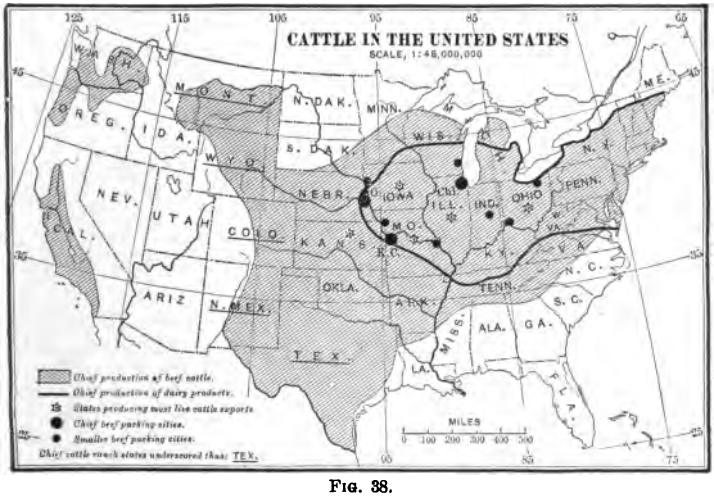

FIG. 38.

other country, except India, has half so many. As most of the people of India eat no meat, they raise cattle chiefly for hides and draft purposes. In countries where transportation from the pastures is very poor, as in parts of South Russia, South Africa, Venezuela, and Colombia, only the hides and tallow are saved; but in the United States nearly all cattle are fattened for slaughter or kept for the dairy industry. This shows that good and cheap trans-

port adds millions of dollars to the value of our herds by opening thousands of markets for all cattle products.

About one-fourth of the beef cattle are raised in the States west of the Mississippi on the great grazing lands, where herds of 20,000 belong to a single owner (Fig. 39). Most of the cattle are shipped into the corn-belt States for fattening, though the practise is growing of shipping maize to the West, and fattening the animals on the ranges. They are then shipped to Chicago, Kansas City, and the other mammoth slaughtering centers, the most southern of which,

FIG. 39.—Cattle-ranch on the Cimarron River.

Fort Worth, Texas, has built up a large meat packing industry (Fig. 40).

Many hundreds of towns and cities throughout the country have cold-storage houses, to which the beef is sent in refrigerated cars. Millions of people on the Atlantic coast are thus supplied with fresh meat sent to them from

FIG. 40.—Cattle-yards near the slaughter-houses.

FIG. 41.—BEEF IN COLD STORAGE.

A large number of these storehouses have been erected hundreds of miles from the meat-packing centers.

the West. Many live cattle are also sent to the markets of the large cities (Fig. 41).

Swine.—About one-third of the hogs in the world are raised in our country, more than a third of the immense maize crop being turned into lard, hams, and other hog products, and thus condensed to about one-fifth of its bulk. Germany, Austria-Hungary, and Russia, the next largest producers, have not so many hogs together as the farmers of this country raise. Hogs are killed, dressed, and made ready for the chill-rooms at our great packing centers at

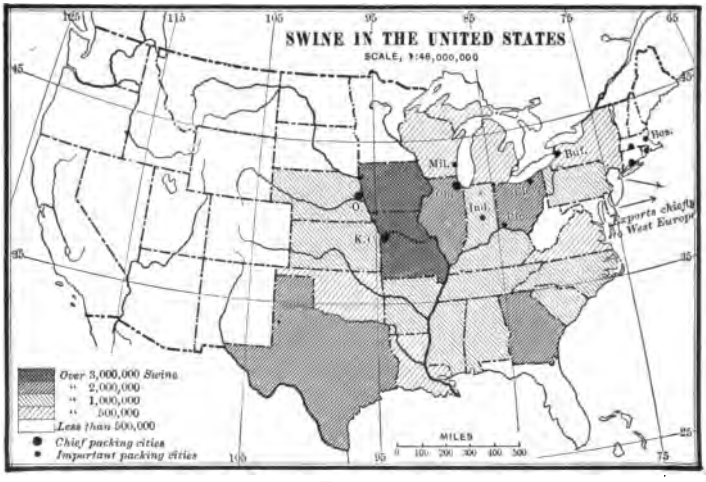

FIG. 42.

the rate of twenty a minute. The largest number are found in the Corn Belt (Fig. 42), and cheap transportation has made the industry profitable in the very heart of the continent. Though maize is the best fattening food, peas are also used in Canada; about the only food for hogs in Servia and parts of Germany is acorns and beech-nuts.

The leading nations are trying to make good use in all their industries of what are called waste or by-products. Very little goes to waste in our packing houses. Hair is

sold for mixing mortar, bones are carbonized and sold to sugar-refiners or turned into fertilizers, sinews are used for glue, small bones for knife-handles, and intestines for sausage casings.

Sheep.—Though our country raises sheep more for wool than mutton, several millions are slaughtered every year at the packing centers, the dressed mutton being distributed in refrigerated cars all over the country.

The export meat trade.—Europe buys most of our animal food exports, Great Britain purchasing more than all the rest of Europe together. Our country is by far the largest source of these supplies, excepting mutton. The hog products lead in value; not many live hogs are exported, but our bacon, lard, pork, and hams are in very great demand. All the important export routes for hog products start from the Atlantic ports of the United States and Canada.

Live cattle are most important in cattle exports, though fresh beef is a very large item. The United States has about three-fourths of the export cattle and beef trade, Australia and Canada being the next largest sources of supply.

We consume practically all our mutton at home, though we export a considerable number of sheep. Most of Europe's great supply of foreign mutton comes from Australia and New Zealand, though Argentina sends more than one-third of it. Mutton is therefore carried over longer sea routes than most other fresh meats excepting a small part of the beef.

Canned and salted meats find their markets mainly in Europe, Latin America, and South Africa. Australia and Belgium send millions of frozen rabbits to England.

Dairy products.—Fig. 38 shows the chief dairying regions in our country, Minnesota also being now included among the large dairy States. Only cow's milk and its products are of large importance in trade, though some cheeses are made

of goat's and ewe's milk. Mare's milk is used as food in inner Asia, and kumiss (mare's milk fermented, a common beverage there) is imported into Western countries.

Milk.—The trade in milk is always the largest where towns and cities are most numerous; thus the most milk is sold to direct consumers in our Eastern States. Irish farmers pay more attention to exporting butter to England than to selling milk, while English farmers, in a land of many large cities, sell more milk than butter. Most of the condensed milk is prepared in the great dairy States of New York, Ohio, and Illinois, but Swiss condensed milk, in cans, is also found in our grocery stores.

Butter and cheese.—The old way of skimming milk to get the cream has been largely replaced by a machine called a separator, which instantly divides the cream from the milk; neither is most of the butter and cheese now made on the farm as formerly, but in factories using machinery that turn out better products at a lower cost than by the old hand methods. These improvements, and the importation of the best milking breeds of Europe to increase the value of our dairy stock, have helped to make our country the greatest producer of butter and cheese, producing, as it does, about one-fourth of the world's supply.

We consume most of our dairy products and also buy many of the finest cheeses of Europe, as the Gruyère and Schweizerkäse of Switzerland, our largest import; the Parmesan, made of goat's milk in Italy; the Edam of Holland, which is found in most cheese markets of the world; the Brie and other cheeses of northern France, and the famous Roquefort of southern France, made of ewe's milk and cured in deep rock cellars. Though Russia, Germany, Great Britain, and France are the largest makers of butter and cheese, after the United States, they are also the largest buyers, for they make far less than they consume. Denmark, with over 1,000 steam butter-factories, exports more butter than any other country; butter, light in color

and salted but little, is sent to England to meet the demand there, while the butter sent in cans to Central America is yellow and very salt, because the people prefer it so. Canada is by far the greatest exporter of cheese. The British eat more dairy products, in proportion to population, than any other people, their country being the greatest export market for butter and cheese (Fig. 43).

FIG. 43.—A modern butter-factory.

Oleomargarine, a substitute for butter, is prepared from various animal fats, and may be sold in our country only under its own name. It is eaten most largely in Europe, the chief producers being the Netherlands and France. We sell a considerable quantity to foreign countries.

Poultry and eggs.—Our country supplies the home demand for poultry and eggs, but Great Britain imports nearly half she consumes, and is the great market for foreign supplies. Fattening chickens for the British market

is a thriving industry in Canada and northern France. The British Isles import nearly two billion eggs a year, Russia being the largest exporter. Danish eggs exported by farmers' societies are stamped on the shells, and if the eggs are inferior the money is refunded by the exporters.

Fisheries.—Sea fisheries are open to all the world, but the nations have agreed to reserve for their own fishermen all fishing rights within three miles of their coasts. The Grand Banks and other shallow waters near the coasts of Newfoundland and Nova Scotia are the most important fisheries in the world.

The cod.—The Labrador current, flowing south from the arctic regions, brings to these banks (Fig. 44) billions of the minute sea plants (algæ) that are the favorite food of the cod, which is more important in commerce than any other fish. Thousands of fishermen from Newfoundland, Canada, the United States, and France are constantly cruising on the foggy banks in small sailing vessels, catching the cod by hand-lines, cleaning and salting them at once, and drying them in the sun after returning to port. The other largest cod-fisheries are off the Lofoten Islands, Norway, and the Dogger Bank in the North Sea (Fig. 45). No other fish is sent to so many lands; in the Roman Catholic countries of Europe and America the people are forbidden to eat meat on many days of the year, and they therefore buy very large quantities of salted cod. Nearly all the cod that enters our ports is consumed at home, fresh cod being found in all the large markets, while salted cod, most of it coming from Gloucester, Mass. (Fig. 44), our greatest fishing port, is sold in every grocery store in the country.

Salmon.—This fish is also very important in international trade, canned salmon being sent to all parts of the world. The largest fisheries are in the rivers of our northwest coast, including Alaska, and in the rivers of British Columbia. Great shoals of salmon, entering the rivers from the sea to spawn, are caught in nets or traps and taken to

the canning factories; Alaska is the greatest source of canned salmon. Many fresh salmon also are sent, frozen,

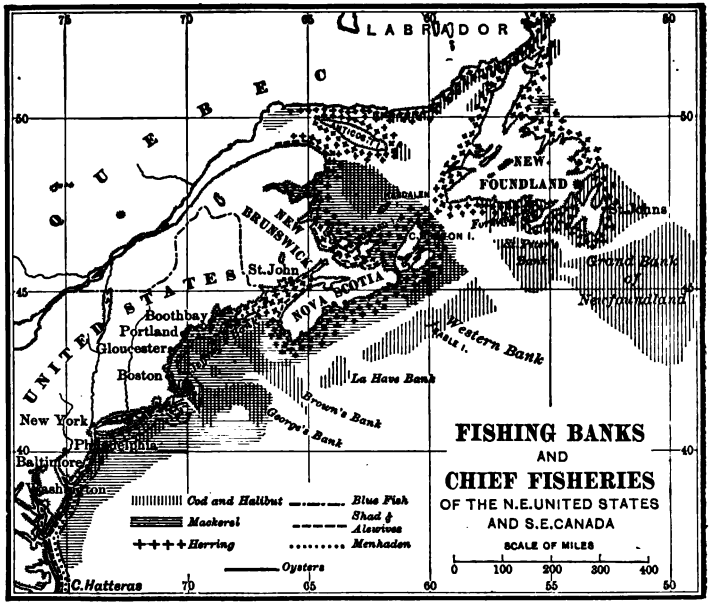

FIG. 44.—The shad (herring family), one of the best American food fishes, is found from Florida to the St. Lawrence, and caught in stake nets and seines in many rivers which it ascends in the spring to spawn. The shad fisheries of Chesapeake Bay and its tributaries are the most valuable, yielding nearly half the product. The Delaware estuary, and the Hudson, Connecticut, and Kennebec are important shad rivers. Alewives enter many rivers from Maine to Florida, are very cheap, and the greater part are salted or smoked. The highly prized bluefish is scattered widely through the warmer waters of the Atlantic and Indian Oceans, but its chief commercial importance is along the Atlantic coast of the United States. The halibut, a very large fish, is caught with lines on either side of the Atlantic, but mainly on the Grand Banks in winter and near Greenland and Iceland. The menhaden is used very little for food, but a large quantity of oil and fish guano is produced from it in factories built for the industry.

to the Eastern markets. Canned salmon is the largest fish export of the United States (Figs. 46, 47, and 48).

The herring.—This little fish is another enormous product of the fisheries of America and Europe. Figs. 44 and 45

show the regions where many millions of them are caught in nets. Fishermen along the Maine coast send many

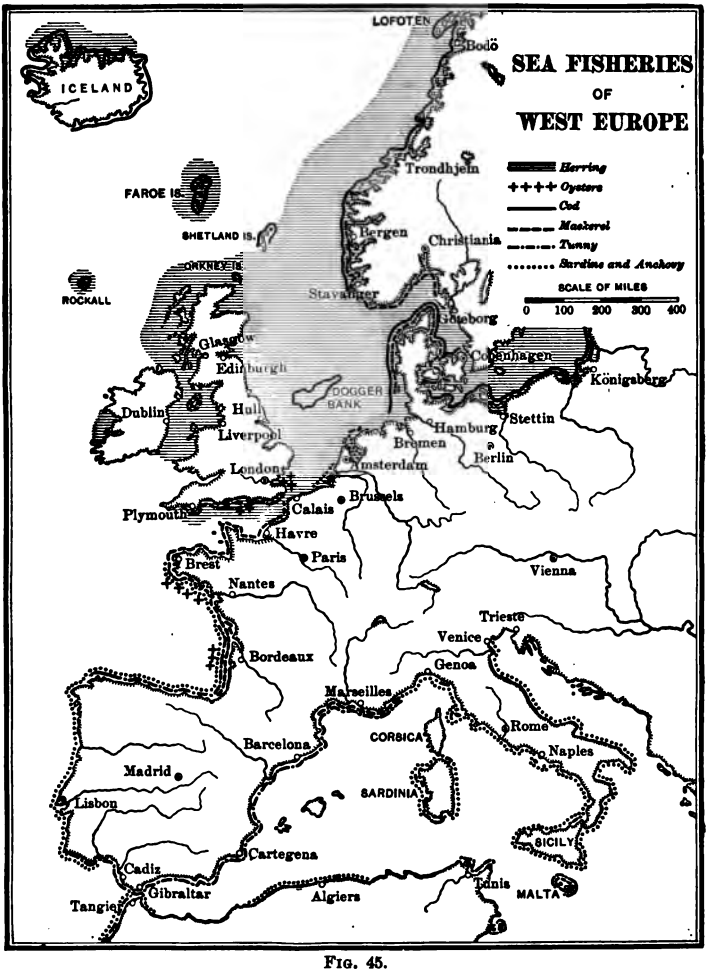

FIG. 45.

thousands of boxes of salted or smoked herring to our Atlantic ports for distribution through the country. The

smallest herring are packed in oil and sold as sardines, the best of them being equal in quality to the true sardine, which is one of the most important fish of southern Europe. Many Maine canneries put up these sardines which have largely taken the place of the imported article. Most of the Norway and British herrings are sent salted to other European countries.

Most of our New England catch of mackerel is salted, but the fish is usually eaten fresh in Europe. Our Great Lakes yield whitefish and trout, and our small lakes and rivers teem with trout, pickerel, and other varieties. Though we vie with Great Britain for the first place among the fishing nations, we export very little except canned salmon and Maine sardines, Great Britain and the West Indies taking most of our exports. The sea supplies much more than one-half, the rivers more than one-fifth, and the lakes about one-tenth of our fish products.

FIG. 46.—A salmon.

The oyster.—This is the most important shell food and the most valuable product of our fisheries, being worth about six times as much as all the oyster-fisheries of Europe together. Thousands of oyster-boats in Chesapeake Bay and Long Island Sound, where most of our oysters are procured, anchor over the beds and take the oysters with "tongs" or dredges from the shallow waters where the bivalves lie on the bottom, fattening on the food that the tides bring them. It has been found that oysters

may be cultivated like a crop of grain, thus insuring an unfailing supply. Millions of young oysters are planted

FIG. 47.—Salmon cannery in Alaska.

in the Long Island beds, where the supply is constantly increasing; but it is decreasing a little in Chesapeake

FIG. 48.—Eskimo women cleaning salmon in Alaska.

Bay, where the natural supply is still the sole reliance. We ship many thousands of barrels of oysters to England during the fishing season, from September to April.

The lobster is sent to market alive or canned. Overfishing has so decreased the supply that we now rely on Canada and Newfoundland for most of our canned lobster. Many men and boys are seen, at low tide, digging clams out of the mud and sand along the New England and Long Island coasts; they supply the many thousands of bushels of clams in our markets.

Whales.—Great fortunes were once made in whaling, but the industry is now small, because petroleum has largely taken the place of whale-oil, and steel, celluloid, and rubber are used as substitutes for whalebone. However, a few whalers still sail from San Francisco, Gloucester, and Dundee, Scotland. The best whale-oil comes from the sperm whale, usually caught in the warmer parts of the ocean. Spermaceti, a white mass found in the head cavities of this whale, is used to make sperm candles. The right or Greenland whale yields an inferior oil, called train-oil, but its most valuable product is the horny fringe of its upper jaw or whalebone, which is still worth $10 a pound.

It has been found that the flesh of some kinds of whales and sharks is agreeable and excellent food. It is now served in some Pacific coast restaurants. The flavor resembles that of beef.

Key West is the center of our sponge industry, the fishing grounds stretching along the south and west coasts of Florida. In these shallow waters, and also among the Bahama Islands, sponges are torn from the bottom by three-pronged forks, the fleshy part is washed away, and the sponges are sent in bales to the New York wholesalers. The best sponges come from the shores of the Mediterranean, where they are found at depths of 150 to 250 feet, and are procured by diving.

Furs.—The finest furs are found in the cold regions where nature provides animals with the thickest coverings. Canada, Russia, and Siberia are therefore the large sources of valuable furs. About 1,000,000 Siberian gray squirrels

are killed every year to supply fur for lining cloaks. Enormous numbers of rabbit-skins are sent to Europe from Australia and New Zealand. The muskrat, mink, marten, fox, bear, and a few other animals are the sources of American furs. Hot countries send monkey-skins and the skins of large animals, such as the lion and tiger.

One of the most popular and useful furs is that of the fur-seal, now found mainly on our Pribilof Islands in Alaskan waters, where they creep up on land, in May, to breed. Efforts are being made to restore prosperity to this industry, which was almost completely ruined by over-hunting. The males from two to four years old, having the most even and finest fur, are alone killed. The skins are salted, dried, packed, and sent to London, where the long hairs are plucked out and the fur is dyed and otherwise prepared for market. England derives a large part of the profit from the fur-seal, as the manufacture is mainly carried on there.

Most of our felt hats are made from the fur of the rabbit, muskrat, nutria of Argentina, and other animals.

Fur garments are in more demand in eastern Europe than in western Europe and America. Furs from all the producing countries are taken to London, which is the greatest auction market, and also to Leipzig and to the Nizhni Novgorod fair, where manufacturers buy the furs of north Russia and Siberia. Our manufacturers buy most of their imported furs from England or Germany; most of the imported fur garments come from France.

The horse.—Russia raises nearly one-third of the horses of the world. Our country sends a great many horses to Europe, particularly to Great Britain, where they are used for draft purposes in the cities. The need of cavalry horses in the large armies of Europe has led to the breeding of horses in Germany, Denmark, and elsewhere, that are specially adapted for that service.

The ostrich.—Forty years ago all the ostrich-feathers in the trade were from wild ostriches that were killed for

their plumage in parts of South Africa and the Sudan. Many of the feathers now come from domesticated ostriches in Cape Colony; these animals are not killed but plucked, just as sheep are sheared, yielding each about a pound of feathers a year. The plumes from the wings and tail are sometimes worth $200 a pound. Ostrich-farming has also been introduced into Argentina, and to a small extent into California, Florida, and Southern Rhodesia. The Karroo, a high dry plateau in South Africa, is the true home of the ostrich. Each bird requires about 20 acres. Cattle graze on the same land with advantage to the ostrich industry. An ostrich yields from one to ten pounds of feathers a year. The Karroo bush is a better food for the ostrich than grass. As ostrich farmers breed for superior feathers, the quality is much superior to that obtained from wild birds.

Ivory.—The Belgian Congo is the largest source of elephant ivory, and Antwerp is the largest ivory market. Not only the tusks of the elephant, but also those of the dead mammoth found in the frozen soil of Siberia, the teeth of the hippopotamus and walrus, and the horn of the narwhal, yield ivory, which is used for combs, billiard-balls, and other small articles, many of which are made in the United States.

Vegetable ivory, the seed of a tropical American palm, very hard and white and used as a substitute for ivory, is sent to this country and others mainly from Ecuador and Colombia.

CHAPTER VIII

THE UNITED STATES—(*Continued*)

Vegetable and animal fibers, their products and the trade in them.

Cloth.—The clothes of people the world over are made of vegetable or animal fibers. It is true that some races, like the Eskimos, wear mainly skins and furs, but the men who crowd Broadway in business hours are clad in cotton, wool, and linen; and this is true of the farmer, the sailor, the woodsman, as well as of the business man; in fact, it is true of civilized man wherever you find him in every land and clime. If we add silk to these fibers, we have the materials for the charming dresses of the women of our country or the belles of France. Some natives of Africa weave their short skirts from short grasses, others know how to make a durable cloth from a growth which they find between the wood and the bark of certain trees. Most cloths, however, are made of cotton or wool; these fibers with silk and flax are the four from which are made the clothes of nearly all mankind.

Cotton.—The most important of the fibers is cotton, the white, downy substance that surrounds the seeds of the cotton-plant. It has won the first place among fibers that are woven into cloth called textiles, because it is inexpensive and comfortable to wear. It is easily and cheaply grown where the summer is long and hot and the rainfall abundant. When the plant matures, the boll containing the cotton and the seed opens; the pickers in our cotton fields—usually negroes of all ages, men, women, and children

—go up and down the rows picking the cotton and putting it into bags which hang from the neck or waist. These bags, when filled, are taken to the gin (page 20), where the seeds are extracted; the cotton is then packed into bales by means of strong presses, and is ready for market. Negroes are most numerous in our cotton States, because most of the African slaves were originally brought here to work in the cotton fields. The United States raised over 11,000,000 bales in 1915.

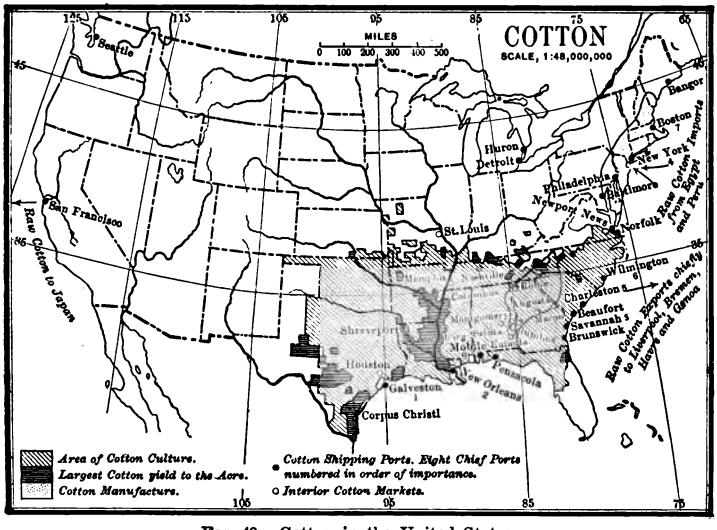

FIG. 49.—Cotton in the United States.

Sources of cotton.—When we are told that nearly half the people of the world wear cotton cloth made by modern machinery, we are not surprised to see (Fig. 19) that cotton fields girdle the earth in the warmer regions. Our country supplies nearly three-fourths of all the raw cotton that the nations are turning into cloth. Different kinds of cotton fiber are used for different purposes, our great cotton belt (Fig. 49) producing the two varieties that are best known in the world's markets:

1. Long staple sea-island cotton, grown on our islands and coast lands, particularly between Charleston and Savannah. As sea-island cotton is the longest of all cotton fibers, it makes the finest cotton-yarn thread and cloth, and therefore commands the highest price.

2. Upland cotton, a shorter fiber, forming the bulk of our cotton crop. As this is adapted for medium and coarse fabrics, which are cheap and in great demand, American upland is used to make a large part of the cotton fabrics of all countries (Fig. 50). The rich Nile delta produces the long, fine Egyptian fiber, for which other nations pay a good price, because it is so well adapted for the finest thread and the best qualities of underwear and hosiery. When our cotton fields were idle and unproductive during the civil war, England relied chiefly upon the cotton of India, making little but the coarser fabrics, because Indian cotton is a short staple. Peruvian cotton, which is strong

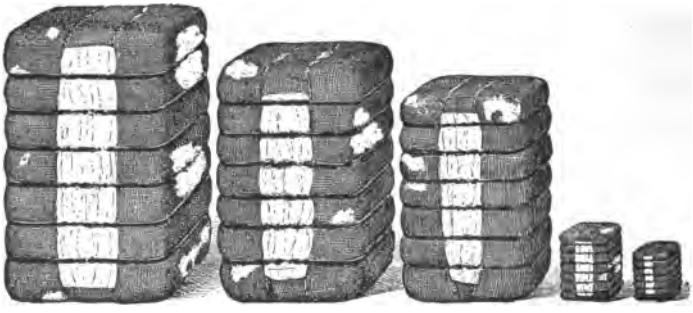

FIG. 50.—WORLD'S CONSUMPTION OF RAW COTTON, 1908 (IN MILLION BALES OF 500 POUNDS EACH).

Showing comparative amounts used in manufactures.

and coarse, is little used for cotton goods, but is mixed with wool for hosiery and underwear. Brazil might send to Europe very large quantities of long staple cotton, but transportation is poor, and the people have not adopted

the best methods of raising and marketing the fiber. Large quantities of clean fiber cotton, mostly grown from

FIG. 51.—Unloading cotton at New Orleans from a Mississippi River steamboat.

the seed of American upland, are raised on irrigated fields in Central Asia, supplying much of the fiber used in Russian mills. Tropical colonies are growing some cotton.

Trade in raw cotton.—As soon as our Southern planters bale their cotton they send it to market towns, where it is sold to agents of home or foreign manufacturers (Fig. 49). As we turn more than one-third of our crop into cotton cloth, there is a great movement by rail or sea to the factory towns scattered through our Southern and Eastern States from Maine to Alabama. A third of the crop is sold to Great Britain, and the remainder to the rest of the world. The movement from the cotton field to our cotton ports

begins in September, and for seven months steamers are constantly loading with cotton (Fig. 51). Observe in Fig. 49 our eight ports that are most important in cotton shipments. Two-thirds of the exports go from the Southern ports.

The great cotton stream crosses the Atlantic from our ports to the manufacturing centers of Europe, mainly Great Britain and the North Sea countries. Smaller cotton streams flow from India, Brazil, and Egypt to these same countries; so that northwest Europe, growing no cotton, is the great receiving center for cotton from all parts of the world. We buy Egyptian cotton for hosiery and some other manufactures, because it is cheaper than our sea-island staple. The housewives of China, weaving coarse fabrics on their rude looms, need more cotton than the Chinese farmers grow; so a great deal of India cotton is brought to them and also to the spinning-mills the Chinese are now building. The greatest land routes for raw cotton are across our country into Canada and from Central Asia into Russia.

Cotton manufactures.—Twenty-seven million spindles in the United States are making cotton yarn by drawing out and twisting the fibers. One girl can attend to hundreds of these spindles. Over half a million looms weave this yarn into cloth, one operative often attending to two looms. These perfected spinning and weaving machines have made cotton cloth so cheap that a great deal is purchased even by barbarous tribes. The areas indicated in Fig. 49 show where we are making, in our Northern and Southern States, more cotton cloth than any other nation produces; but the value of Great Britain's product is larger than ours, that country making more of the finer grades of goods than we manufacture. Medium and coarse fabrics—such as calico, sheetings, and cotton flannel—are in largest demand in our home markets, and are therefore the chief product of our cotton-mills, those of New Eng-

land turning out about three-fourths of all our cotton cloth. Great Britain, Russia, Germany, France, and Belgium, are the greatest cotton-spinning and weaving countries in Europe, supplying the rest of the world, excepting this country, with most of their cottons.

Trade in cotton manufactures.—Cotton yarns and cloths are sent to all parts of the world, but chiefly to temperate and warm countries, where light-weight clothing is in large demand. The cloth made by British cotton-spinners, and sent to foreign countries every year, would reach from the earth to the moon ten times, or make a cotton band which would go one hundred times round the earth at the equator. Though our export trade is constantly growing, Great Britain sells to foreign lands eight to ten times the value of the cotton goods that we export; but cotton manufactures are the largest industry of Great Britain, the exports being worth more than all its woolen, iron, and steel exports together, while we have five larger industries than cotton-cloth making. North China buys about half of the cotton cloth we sell, the product of British looms filling the south China demand. Russia sends cotton cloth to inner Asia. Germany and Belgium have markets in warm countries, but France consumes nearly all her large production.

Wool.—In the past fifty years the great grazing lands of Australasia, Argentina, South Africa, and our Western plains have afforded cheap pasturage for millions of sheep (Fig. 10), so that the wool clip has nearly doubled. Increased production has reduced the price of wool, improved machinery has diminished the cost of manufacturing it, and we are therefore able to buy woolen cloth now much cheaper than formerly.

As Europe grows in population it plows the grass lands to raise more breadstuffs; thus the population increases while the sheep decrease; the people need more wool and have fewer sheep to supply it. No manufacturing nation

therefore produces all the wool it needs, but supplies its deficiency mainly from the new sheep-growing regions

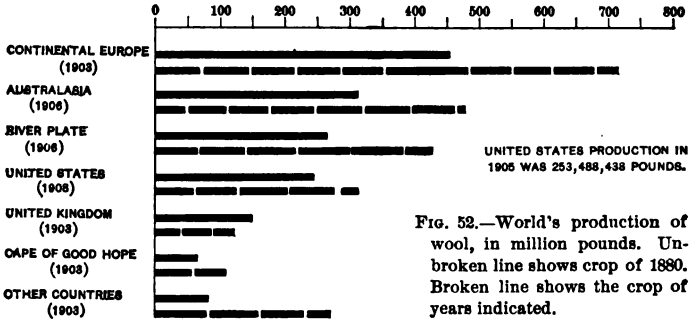

FIG. 52.—World's production of wool, in million pounds. Unbroken line shows crop of 1880. Broken line shows the crop of years indicated.

thousands of miles over the sea. Europe, however, still produces more wool than any other continent (Fig. 52). If it were not for our grass plains we should send to the same markets for large quantities of wool; as it is, our farms and ranges supply only one-half of the fiber we require (Fig. 53).

Short or carding wools, used mainly to make cloth for men's wear, are the greatest wool product of this country, and of Argentina and Australasia; they are supplied mostly by the pure or mixed merino breeds, to which three-fourths of our sheep belong. Long or combing wools, from long-wool breeds in England, western Australasia, Canada, the eastern United States, and some other regions, are better adapted for hosiery and women's dress goods. Coarse long wools for carpets come from Europe, China, and Asia Minor. More than half the wool we import is made into carpets.

The wool or hair of a few other animals is used in wool manufactures. The fleece of the Angora goat, raised in Cape Colony, Asia Minor, and the United States, is the material of which mohair is made. The wool of the alpaca (Fig. 10) gave rise to the large alpaca-cloth industry.

Camel's hair mixed with other yarns is used for shawls and carpets. The famous Cashmere shawls are made from the downy covering next the skin of the Cashmere goat.

Trade in wool.—Only Australasia, Argentina, Uruguay, and South Africa export most of their wool. Their population is far too small to utilize the wool they produce. The large streams of wool exports converge from these countries in the manufacturing states of north Europe. Smaller streams from the same sources flow to our Atlantic and Pacific ports. The most northern supplies of wool come from Iceland, and the most southern from New Zealand. Boston is our largest wool market, because it is most convenient to the great woolen-mills of New England.

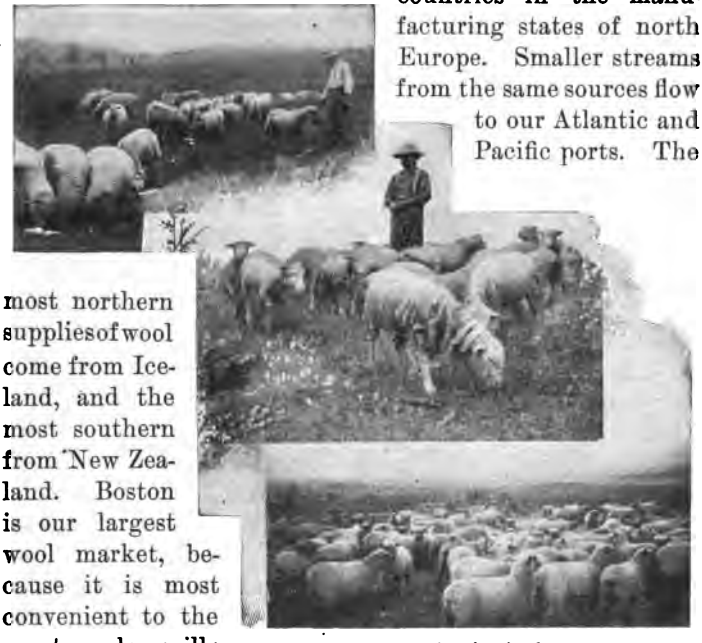

FIG. 53.—Sheep-farming in the West.

Woolen manufactures.—The value of cotton cloths made every year is much greater than that of woolen cloths, for cottons are distributed far more widely over the world. Most of our woolens are made in New England, New York, New Jersey, and Pennsylvania, near the cotton-mills; and the largest product is cloth of good, but not the finest

quality, for men's suits. Great quantities of this cloth are sold to makers of ready-made clothing, which is worn by most American men. In all large cities we may see men carrying bundles of coats or trousers to the wholesale dealers in ready-made clothing who employ them; for this immense industry is carried on in the homes of tailors or in small shops with steam power. Woolen-mills also make the finest grades of cloth, but these qualities require so much extra care, skill, and labor, that our manufacturers are at a disadvantage as compared with those of England, France, and Germany, who pay lower wages; many of the finest suitings of those countries are therefore imported, suits "to order" being made from them in tailor shops.

The worsted-mills make serges, merinos, and other goods for women, besides hosiery and knit goods. If we were to visit Cohoes, N. Y., we should see water-power driving the machinery in great mills that make more hosiery and knit underwear than any other place in the world.

Our country is the greatest carpet-making nation; Philadelphia, the chief center of woolen manufactures, weaves more carpets than all the rest of the United States. Many of these products are excelled only by the famous Persian carpets and Turkish rugs made on hand-looms in Oriental countries, where thousands of men and women weave them with infinite labor in their homes.

Woolen goods are not nearly so important in the world's trade as cotton cloths. Most of all our products are consumed at home. England, Germany, and France alone are prominent in the export of woolen fabrics; they sell a great deal to those cool countries that can afford to pay for superior products.

Silk.—Many ages ago an Empress of China discovered that the very fine thread which a certain kind of caterpillar spun in making its cocoon might be woven into beautiful glossy cloth. This was the beginning of the great silk

industry. We may think of the Chinese silkworm as a domestic animal, for it is reared just as cattle are, for its value to mankind. It is the only caterpillar reared for its silk; but coarse silk is made from the cocoons of several wild species that feed on oak leaves in India and China.

When the silkworm is hatched it is a tiny object; but feeding for forty days almost continually on mulberry or osage-orange leaves, it becomes one of the largest of caterpillars. Then it spins its cocoon, which is heated to kill the larva, as it would otherwise become a moth. A girl, paid in China, Japan, or Italy, sometimes but two cents a day, reels the light yellow silk into skeins; she dips the cocoon into hot water, to soften the gum that sticks

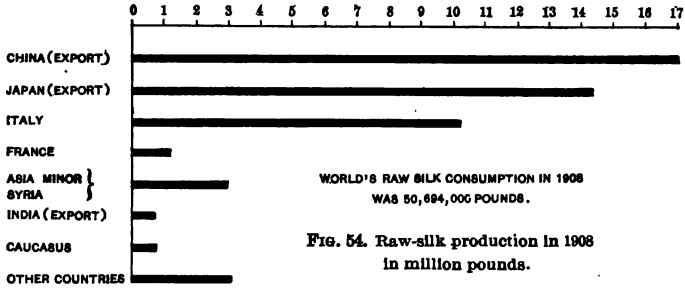

FIG. 54. Raw-silk production in 1908 in million pounds.

the threads together, then she passes several threads through her fingers as she reels, so that they are united into one by the gummy substance. It takes about 1,000 cocoons to make a pound of raw silk. Silk is not spun as cotton and wool are, but after it is twisted and doubled, to make a stronger thread (thrown silk), it is ready for the loom.

Sources of raw silk.—The silkworm is raised in many countries, but China, Japan, and Italy are the most important (Fig. 54). Thriving wherever the mulberry grows, the silkworm might be extensively raised in our country, partic-

ularly in the South. It is cheaper, however, to import raw silk than to raise it here, because it is the product in other countries of very cheap labor; efforts are now being made to introduce the culture into our Southern States. The United States buys about one-third of the exports; France, Germany, Switzerland, and England are also large buyers. In 1916 Japan was the largest producer.

Silk manufactures.—The chief silk manufactures are broad goods (for dresses, etc.), ribbons, sewing silks, and laces. The Chinese and Japanese make enormous quantities of silk goods both for the home trade and export. The

Fig. 55.—Interior of a silk-mill at Paterson, N. J.

United States, France, Germany, and Switzerland make about four-fifths of the silk goods produced by Western nations. The United States is the largest manufacturer, the value of its silk industry, built up in less than sixty years, being more than $254,000,000 in 1914, supplying its people with four-fifths of the silks they use. Nearly all the mills are in New Jersey, New York, and Pennsylvania. The greatest silk manufacturing center is Paterson, N. J., which has the largest ribbon-mill in the world. This country excels in dress goods of a medium quality; France in both

the cheap and expensive silks; Germany in cheap products; and Switzerland in the finest goods. Water, free from mineral impurities, is needed for silk dyeing; it is their advantage in this respect that has made Lyons, France, Paterson, N. J., Zurich, Switzerland, and Crefeld, Germany, the greatest silk manufacturing cities (Fig. 55).

Because France, Germany, and Switzerland make so large a variety of goods and patterns, suiting many different tastes and purses, they have about four-fifths of the entire export trade, Great Britain and the United States buying most of the goods they sell abroad.

Flax.—As much hard labor is required to prepare flax fiber, its cultivation for textile purposes is mainly confined to countries where labor is cheap. Russia supplies nearly four-fifths of the flax of the world; but the best quality comes from the valley of the Lys River in Belgium, whose water, free from lime salts, is particularly adapted for retting the straw or separating the woody matter from the fiber. Our country grows flax mainly for its seed, from which linseed-oil is manufactured.[1] We therefore need to import large quantities of lawns, cambrics, and other linen goods, of which Great Britain and Ireland make enormous quantities, the next largest producers being Germany, France, Belgium, and Russia. The latter country sends a great deal of flax fiber to Ireland and Germany. Argentina raises an enormous quantity of flax for linseed. The United States is the great market for the linen exports of north Europe.

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[1] The seeds of several fiber-plants are very valuable sources of vegetable oil. Many millions of dollars are paid every year to our planters for the cotton-seed that is sent to Southern mills to press out the oil. Cottonseed-oil is used in cookery as butter and lard are used, and also as a substitute for olive and some other oils. What is left of the seed is fed to cattle or used as a fertilizer (oil-cake and oil-cake meal). Our house paints are made chiefly of linseed-oil, the oil of flaxseed. Hempseed-oil is used in making soaps, paints, and varnishes.

Other fibers.—Several other fibers are important in trade. Hemp, used for rope and sail-cloth, is mostly grown in Europe and India; Russia and Italy are the largest exporting countries. We once raised great quantities, but henequen and manila hemp have taken its place to a large extent (Fig. 56). Manila hemp thrives mainly in the Philippines, the United States and Great Britain buying most of it for cordage and sail-cloth. Manila paper is made

FIG. 56.—A hemp-field in Kentucky.

of old Manila rope. Most of our cotton sacking is made of henequen or sisal hemp, the great export crop of Yucatan. Many goods that come to us from foreign lands are packed in gunnybags made of jute, which grows almost entirely in the delta region of the Ganges. We import a great deal of raw jute to make into carpets, curtains, and other textiles, and jute butts for paper-making. The chief seat of jute manufactures is Dundee, Scotland.

Esparto (alfa in Algeria) grows wild in parts of Spain

and Africa, and is used for making paper, rope, and matting. The Chinese weave coarse fabrics of ramie or China grass, which is also useful for cordage. New Zealand flax, or phormium, is another fiber growing wild in the valley of the Waikato River; it is exported for paper, cordage, and fabrics.

Paper.—This common convenience of life is made from vegetable fibers which, reduced to pulp, mat together when freed from the water used in the pulping process. The United States, Germany, and Great Britain make the most paper, using linen and cotton rags, wood, straw, old papers, and esparto in the manufacture of printing, writing, and wrapping papers, which are the most important kinds. Wood-pulp is the largest material used wherever great forests of spruce or poplar exist, as they do in our country, Canada, and Germany. We make more paper than any other nation, largely because of the great number and size of our newspapers, which consume over 3,000 tons of paper a day. Nearly all our newspaper is made of wood-pulp, an area half as large as Rhode Island being stripped of pulp-timber every year to make the paper on which the news of the world is printed. Writing and other better grades of paper are made mostly of linen and muslin rags; Holyoke, Mass., is the largest center of this industry. Great Britain, Russia, and Spain are the leading importers of paper. All the other great producers, including the United States, export more than they import in time of peace; but the great war compelled many European newspapers to reduce their size, as the usual quantity of print paper was not produced.

CHAPTER IX

THE UNITED STATES—(*Continued*)

Forest products, their manufactures and the trade in them.

Importance of wood crops.—A very large part of our comforts and conveniences come from products that the forests supply. Wherever we turn, we see wood serving innumerable uses. Many of our houses are built of white pine, which, like the apple among fruits, is a good all-round material for many useful purposes; flour-barrels are made of elm, wine-casks usually of oak, furniture of walnut, ash, maple, and many other woods; the dainty, light boxes in which the French people pack silks, perfumeries, mineral waters, and other specialties are of poplar. In the warmer parts of Asia, houses, bridges, weapons, and many other things are made of bamboo; teak, the finest timber of India, Indo-China, and Siam, lasts for centuries and is used by all nations for the woodwork of war-ships, because cannon-shot does not splinter it. Most of the fuel used in the homes of Russia and France, and one-third of the fuel consumed in our kitchen stoves, is wood. These facts are sufficient to illustrate the vast importance of the wood industries.

Sources of wood supplies.—The great forests which girdle the earth between the arctic circle and the thirtieth parallel, north latitude, are the largest sources of commercial products derived from trees (Fig. 57, pine- and leaf-trees). Here are the great forest areas which cover almost half of Russia, nearly a third of Canada, and a fourth of the United States, making these three nations the greatest wood-producing countries in the world.

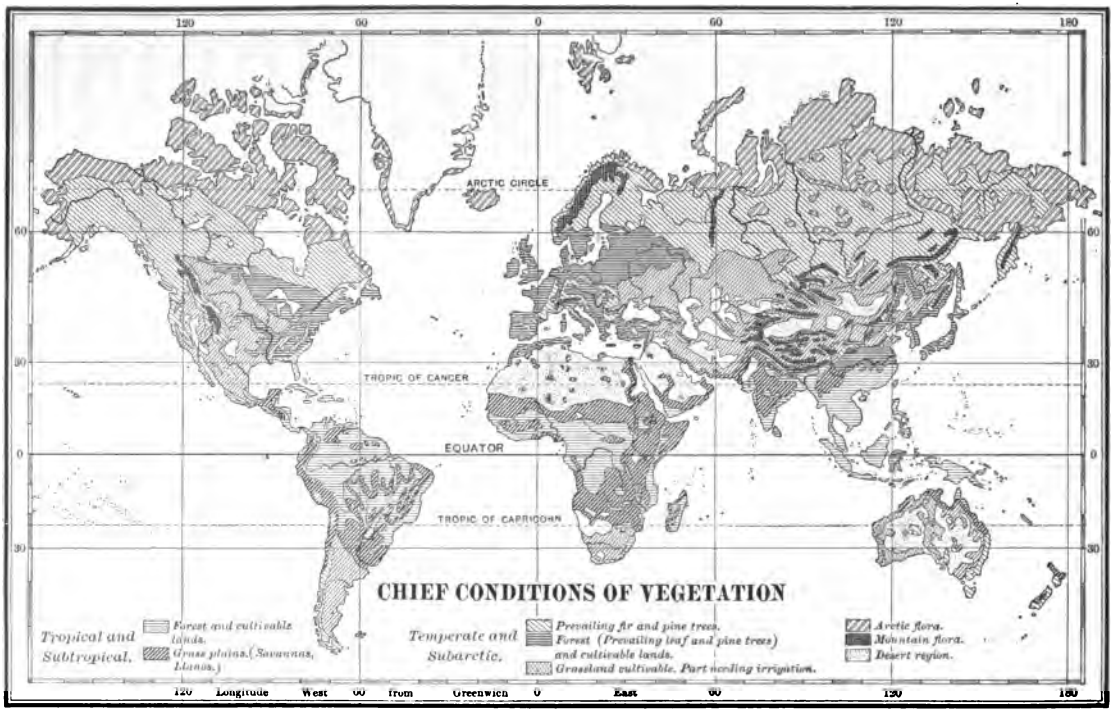

FIG. 57.—This map shows the distribution of forest, cultivable, and grass lands to which the larger part of human occupations are confined. Regions of fir-, pine-, and leaf-trees supply lumber, grass plains nourish flocks and herds, and cultivable lands produce farm crops. Mountain flora, close to or above the snow-line in all latitudes, is of an Alpine character.

Forests need protection.—Although it takes about one hundred years to grow a crop of timber, forests have been cut down for centuries without any thought of replacing them. Lumbermen never dreamed of a second crop on the ground they cleared. As a result, one of the greatest sources of wealth has been squandered. But to-day, all enlightened nations try to preserve their forests. It is against the law in Germany, France, Austria, and India to cut down a tree without planting another. The United States is beginning to protect its forests, and to encourage the planting and the care of trees. Many thousands of trees, for example, are now flourishing on the once treeless prairies of eastern Nebraska.

Lumber.—About half the timber that is cut is used for fire-wood; but the largest commercial product of the forests is lumber. It is so heavy and bulky that freight charges must be low or it does not pay to carry it far. This is the reason why the cheap water routes are used so much in the transportation of lumber. Enormous supplies of lumber are floated down the rivers from the forests of south Germany to the plains of Prussia. Our Northern pineries have made the Great Lakes the most important lumber route in the world. Many shiploads of lumber go to England and South Africa even from our Pacific ports. When Argentina needed ties for new railroads it was found that it would cost so much to carry them from the northern forests of that country and Paraguay to the rivers, that many shiploads of ties were ordered from Australia at less expense. From these examples we see the importance of cheap transportation for lumber and timber.

The United States is the largest producer of lumber. Sawmills are found nearly everywhere, most of the country, except the great Western plains, growing more or less timber which is fit for lumber (Fig. 58). Several million houses might be built every year with the lumber we manufacture; but lumber is also used for many other purposes.

Soft-wood lumber.—Three-fourths of our lumber is made from soft woods, such as various pines, spruce, hemlock, and redwood. The great pineries of Minnesota, Wisconsin, and Michigan supply our white pine, a most useful timber, though the supply has now been greatly reduced because

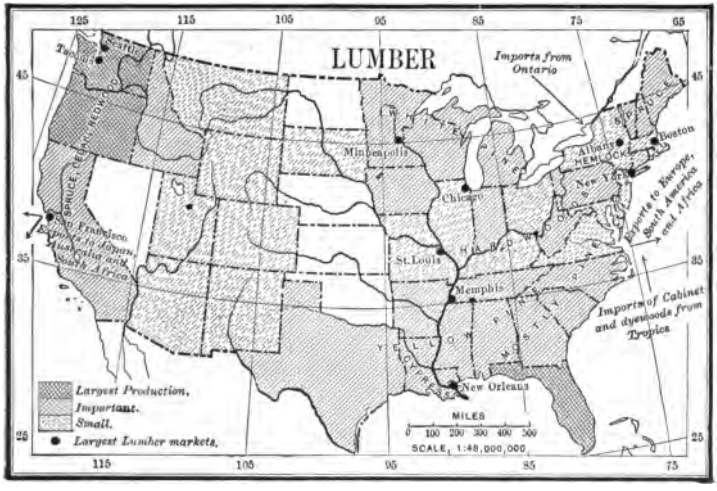

FIG. 58.

of overcutting. Thousands of men spend the winters in logging camps in these northern woods felling trees; deep snow makes it easy and cheap to haul the logs on sleds to the banks of the rivers on which, when the spring thaw comes, the logs are floated to the sawmills (Fig. 59). The hum of the saw in many mills is heard day and night; the great piles of lumber they produce are carried by rail, steamboat, or raft to the large lumber markets (Fig. 58), whence it is distributed to the smaller towns. As Chicago has water communications with the sawmills near the pineries and is in the center of the great Western lumber trade, this city is the largest lumber market in the world.

FIG. 59.—A LOG DRIVE.
Preparing to float logs from the pineries to the sawmills.

But now the largest source of soft-wood lumber is the Southern States along the Atlantic and the Gulf, from Texas to Virginia; the Georgia and loblolly pines are the most important varieties, supplying many Southern and Northern markets.

The Northeastern States are the largest source of hemlock and spruce; both are useful for lumber; spruce is also used for making wood-pulp, and hemlock bark is the most important material used in tanning our leather. The tannin in the bark combines with the gelatin in the hides, changing them into leather.

The soft woods of the Pacific coast supply about one-tenth of our lumber; among them is the gigantic redwood, and the Douglas fir, a tough, strong timber which fills much of the world's demand for ship-masts and spars.

Hard-wood lumber.—Some of our hard-wood supplies are mixed in with the pines in the northern portion of our southern pine belt; but most of our hard-wood lumber, which is a fourth of all the lumber we manufacture, comes from the wide region east of the Mississippi, between the northern and southern soft-wood belts, with St. Louis and Memphis as the greatest markets (Fig. 58). Hard woods, such as the oak, ash, maple, walnut, elm, and others are much less employed for lumber than soft woods, but are, however, in great demand for house-trimmings, furniture, the woodwork of machinery, and other purposes.

The trade in lumber and timber.—Soft-wood lumber and logs, chiefly from pine- and fir-trees, are the greatest element in the world's lumber trade. European states are the largest buyers of lumber, for, excepting Russia, they have small forests compared with our immense area of timber lands. Russia, Sweden, Norway, and Austria, among the large states, alone produce more lumber than they need. All the other large countries import great quantities, Austria shipping supplies into Germany and Italy, while the lumber ships of Sweden and Norway are constantly plying to other

ports of Europe, which also receive large quantities from Canada and the United States. Europe, therefore, is the center that draws most of the lumber exports.

We buy little lumber or timber except from Canada and tropical countries, and we export to Europe and tropical America much more than we import.

Tropical regions have no soft woods that compare favorably with our pines. We sell, therefore, to tropical America a great deal of our soft-wood lumber. In return, these hot regions send to us and to Europe their costly hardwoods, such as mahogany, rosewood, and ebony. These beautiful woods are used for making the finest furniture, for veneering, and for other cabinet work.

Manufactures from lumber.—Many of the things made from lumber are produced near the sources of lumber supplies. For example, as the busy cities of Grand Rapids, Saginaw, and Muskegon, Mich., are on the threshold of fine forests, they are among the greatest manufacturers of furniture. Scattered through our Southern States, there are many furniture factories near the forests that supply the lumber. Most of our farm machinery is made in the Mississippi Valley and in the lake region, including western New York, because wood supplies and the farming industry are both very large in these parts of the country, so that both the lumber for the machines and the market for them are near at hand.

Gums and resins.—Turpentine, resin (commonly called rosin), and tar are large products of the pine forests of Georgia, Alabama, and the other coast States from North Carolina to Louisiana. The trees are tapped for the oily sap (crude turpentine), which hardens into gum and is then distilled by heating; the turpentine passes in the form of vapor through cold pipes in which it is condensed, running out as spirits of turpentine. The residue remaining from this process is the rosin of commerce. Spirits of turpentine, one of the most important of the volatile oils, is used

in paints and varnishes. Rosin is employed in making soap, varnishes, paper, and several other manufactures. Tar, distilled from wood by heat, is used for calking ships and coating rope rigging. As Russia and Scandinavia produce much smaller quantities of these products, turpentine and rosin are large exports from this country.

Many woods and other plants, like logwood, supply dyestuffs which were of great importance till they were largely supplanted by the cheaper aniline colors, which are chemically produced from benzene, one of the by-products of petroleum. We import more indigo, a blue dye, than all other dyes together; but artificial indigo, equal to the natural product, is now made on a large scale in Germany.

India-rubber.—Caoutchouc, or india-rubber, is the hardened milky juice of a few tropical trees and vines. About 130 years ago artists in England began to use rubber to erase pencil marks, from which fact it derived its name. The articles made from rubber were not satisfactory, at first, for the rubber melted in summer and cracked in winter. When Charles Goodyear discovered that by applying heat and sulphur to raw rubber it would withstand any climate and might be made into many useful articles, rubber came into large demand. It was found that it might be plentifully obtained in the tropical parts of America, Africa, and Asia. The forests of the Amazon now supply two-thirds of it, and in the season many small steamers go far up the river and its tributaries to collect the caoutchouc, which is gathered by thousands of rubber collectors.

The United States consumes nearly half of the raw rubber of the world, one reason being because New England manufactures six times as many rubber shoes and boots as the whole of Europe. Everybody in this country wears "rubbers," while their use in Europe is confined to persons of means. Bicycle and automobile tires, combs, buttons, and many other articles are also made of rubber.

The international trade in rubber is mainly in the raw

material. Manufactured rubber products are mostly consumed in the countries where they are produced.* .

Gutta-percha.—The Malay archipelago, Borneo, and Sumatra are the largest growers of the gutta-percha tree, whose hardened juice is the best material yet found for coating submarine cables. It is a perfect protection for the wire, as salt water does not harm the gutta-percha that envelops it. The tree is cut down to obtain the juice, about 6,000,000 trees having been killed for gutta-percha since the gum became an article of export in 1845. As the demand in the United States and the European countries which lay ocean cables is now greater than the supply, the French and Dutch are planting the tree in the East Indies.

Quinin.—The cinchona-tree yields quinin (Peruvian bark), which is highly valued for its curative effects in malaria—commonly called "chills and fever"—and some other diseases. Though a native of Peru and Ecuador, the cinchona-tree has been planted largely in Ceylon, Java, and India, whence the greater part of the drug is now derived. Our imports are considerable, and quinin is very largely consumed in Italy and tropical Africa.

The cork-tree.—The thick, soft bark of the cork-tree is known in commerce as cork-wood. The tree grows only in Mediterranean countries and Portugal. Spain and Algeria sell much of the bark, but Portugal is the largest source of supply. When the bark is stripped from the tree another bark begins to form, which yields a fresh crop in about twelve years. Nine-tenths of the cork-wood sold is made into bottle stoppers. As manufactured cork is dutiable in the United States, we make most of our corks from imported cork-wood.

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* Efforts to raise rubber plants on plantations and thus increase the supply and assure the future of the industry were long unsuccessful. The problem has been solved, and rubber planting is now (1910) proving a success in many parts of the tropics.

CHAPTER X

THE UNITED STATES—(*Continued*)

Mineral products and the trade in them.

Mining.—In the deepest mines it is so warm that miners are able to keep steadily at work only when sprayed with water. Because heat increases so rapidly with depth, mining is necessarily confined to the upper rocks. It is not likely that minerals more than a mile below the surface will ever be mined; but the forces of nature, that crushed rocks together and lifted them into mountain-ranges, have brought near the surface many valuable minerals, which were once buried far beyond the reach of man.

Minerals are obtained by mining when they can be reached only by digging into the rocks, and bringing them to the surface through shafts, as in the case with most of the metals; they are obtained by quarrying when the works are open and visible at the surface, as is usually the case with building-stone and much iron ore.

Coal.—Coal is very widely distributed over the earth (Fig. 60). Many thousands of years ago, when vegetation was far more luxuriant than it is to-day, enormous masses of decayed plants or forests formed thick beds, and in the course of ages were transformed by heat, moisture, and pressure into a black or brownish substance—the coal we now use for fuel. There are several varieties, but coal is broadly subdivided into hard coal or anthracite, used mainly in our homes; soft or bituminous coal, the great fuel for steam making; and lignite, which, also, is valuable for fuel.

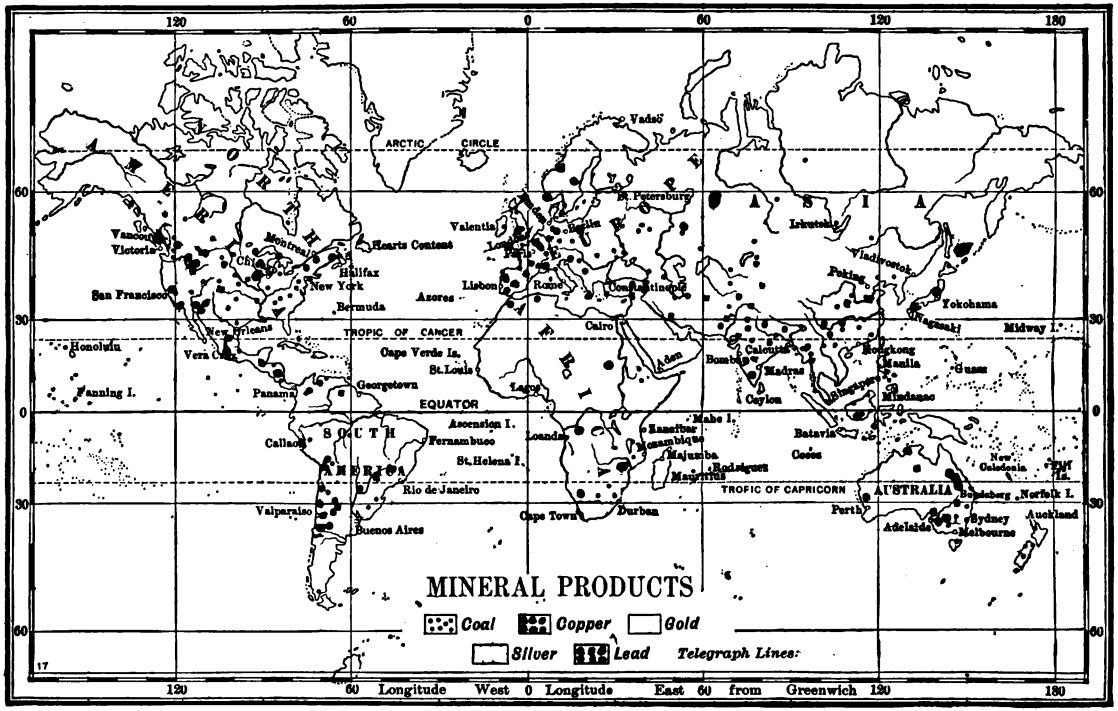

MINERAL PRODUCTS
Coal
Copper
Gold
Silver
Lead
Telegraph Lines:
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
TROFIC OF CAPRICORN
Longitude West 0 Longitude East 60 from Greenwich
A S I A
S O U T H A M E R I C A
AUSTRALIA
Vancouver
Victoria
San Francisco
Honolulu
Fanning I.
Vera Cruz
New Orleans
Chicago
Montreal
Hearts Content
Halifax
New York
Bermuda
Azores
Lisbon
Valentia
London
Paris
Berlin
Rome
Vadsö
St. Petersburg
Constantinople
Cairo
Cape Verde Is.
St. Louis
Georgetown
Panama
Lagos
Ascension I.
Fernambuco
St. Helena I.
Callao
Rio de Janeiro
Valparaiso
Buenos Aires
Cape Town
Durban
Loanda
Zanzibar
Mozambique
Majunba
Mauritius
Rodrigues
Mahe I.
Aden
Bombay
Calcutta
Madras
Ceylon
Batavia
Cocos
Irkutsk
Vladivostok
Peking
Yokohama
Nagasaki
Midway I.
Hongkong
Manila
Guam
Mindanao
Singapore
New Caledonia
Fiji Is.
Norfolk I.
Auckland
Sydney
Melbourne
Adelaide
Perth
Bendigo
Bendigo

FIG. 60.

Manufacturing industries depend upon coal to drive machinery and also to extract iron and other minerals from their ores; so that coal is the foundation on which most industries stand. For many years Great Britain was the largest producer in the world, but our country took the lead in 1899, and is increasing it every year. No other country approaches these two nations as coal producers (Fig. 61).

FIG. 61.—World's production of coal, 1908 (in million long tons). Total, 1,130 million tons. The U. S. production is increasing. In 1905 it was 373,207,956 tons.

Coal in the United States.—Coal is the most important mineral product of our country. Fig. 62 shows its wide distribution in the United States. One reason why we are able to sell so many of our manufactures in other lands, is because our coal, which is so cheaply mined and transported, furnishes cheap power for driving machinery and lowers the cost of making goods. Fig. 63 shows a miner breaking down the coal in a mine far under the surface.

Coal in other lands.—The United States, Great Britain, Germany, France, Austria, Belgium, and Russia are the greatest coal producers. We see in this fact one of the chief reasons why they lead the world as manufacturing nations. Many other countries produce coal, and some great coal regions are not yet developed. China, for example, mines little, though her coal-fields are believed to be as large as those of the United States.

Trade in coal.—Great Britain, with many mines near the sea so that her coal is easily shipped, exports more than all the other nations together. Bituminous coal is exported in much larger quantities than any other kinds, because it is the

fuel of factories and steamships. The large coal importers are France, Germany, and Belgium, which, though they have large coal-mines, need to buy foreign coal to feed the furnaces of their factories and shops. Switzerland, Sweden,

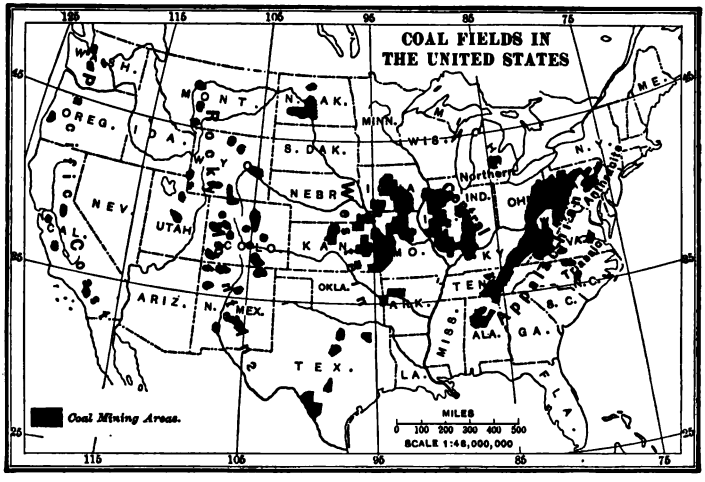


FIG. 62.—Coal underlies more than one-sixth of the surface of this country. Bituminous coal is taken from seven great fields: (1) The Appalachian field, extending over 900 miles from New York to Alabama, supplies nearly two-thirds of the total; (2) the Central field, in Illinois, Indiana, and Kentucky, supplies nearly one-sixth; (3) the Western field, west of the Mississippi, supplies about one-ninth; (4) the Rocky Mountain, (5) Pacific coast, (6) Northern (in central Michigan), and (7) Triassic fields (in the Richmond basin, Virginia, and along the Deep and Dan Rivers in North Carolina) supply the remainder. The map also shows the anthracite area in the valleys of the Susquehanna, Lehigh, and Schuylkill Rivers, covering only 480 square miles in eastern Pennsylvania.

and Italy are large importers because they have no home supply. When steamships make long voyages they need to recoal on the way; so there are many coaling stations all over the world where vessels may buy coal, Great Britain supplying many of these stations. As the largest buyers are the countries nearest to Great Britain she has a market at her doors for most of her surplus. Coal is so heavy, bulky, and cheap that we are seldom able to send it profitably thousands

of miles over the seas to compete with British coal in European markets, though American coal is cheaper at our mines than British coal.

Most parts of our country buy bituminous coal from neighboring fields, but anthracite, which is almost wholly derived from eastern Pennsylvania, is sent far West. New York city, from its being the center of a great shipping trade and large manufactures, is, except London, the greatest coal market in the world.

FIG. 63.—In a coal-mine.

By-products of coal.—Coal-gas, produced from bituminous coal, is made in all important towns of our country for lighting houses and streets, for heating and cooking. Some

important products are obtained from the distillation of coal-gas, such as coal-tar. Aniline dyes, with which most of our cloths are colored, are made from one of the products of coal-tar; another important by-product is ammonia, which, being rich in the nitrogen that plants require, is a valuable fertilizer.

FIG. 64.—Coke-ovens.

Coke.—The fuel used in making nine-tenths of our pig iron is coke, produced by heating certain kinds of bituminous coal in ovens from which air is almost wholly excluded (Fig. 64). It is freed from impurities in the process of coking and is therefore better adapted for smelting iron ore

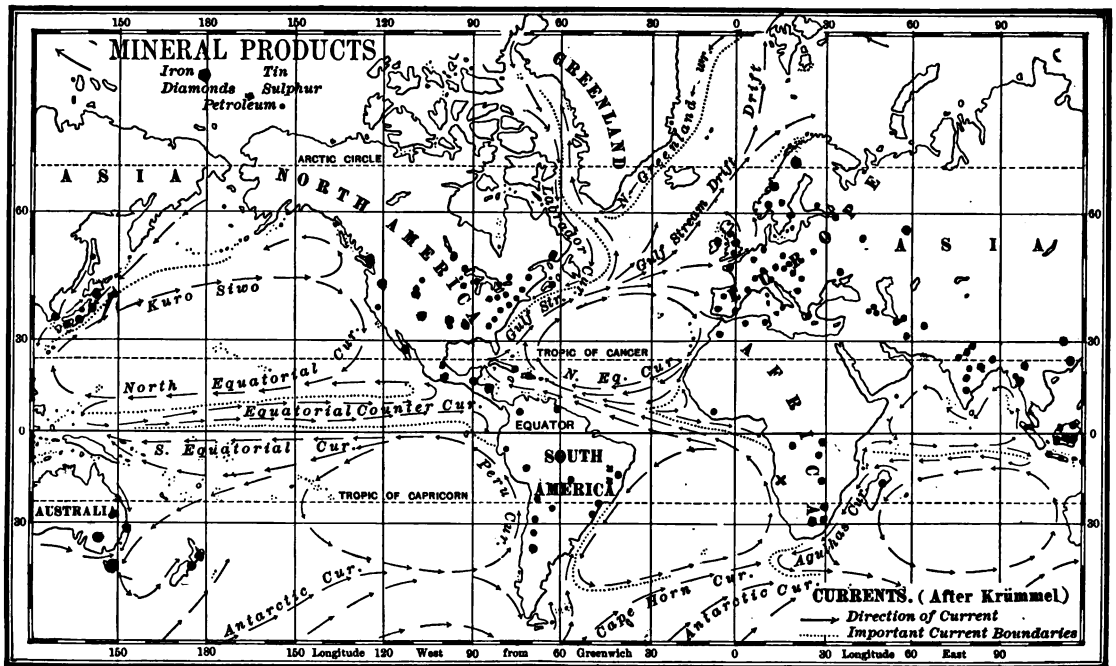

MINERAL PRODUCTS
Iron
Tin
Diamonds
Sulphur
Petroleum
ARCTIC CIRCLE
ASIA
NORTH AMERICA
GREENLAND
Labrador Cur.
Gulf Stream
Greenland Cur.
Gulf Stream Drift
Drift
EUROPE
ASIA
AFRICA
Kuro Siwo
Japan
TROPIC OF CANCER
North Equatorial Cur.
Equatorial Counter Cur.
N. Eq. Cur.
EQUATOR
S. Equatorial Cur.
SOUTH AMERICA
Peru Cur.
TROPIC OF CAPRICORN
AUSTRALIA
Antarctic Cur.
Cape Horn Cur.
Agulhas Cur.
CURRENTS. (After Krümmel)
Direction of Current
Important Current Boundaries
150 Longitude West from Greenwich
30 Longitude East

Fig. 65.

than any other fuel; so all the great iron-producing countries make large quantities of coke. The Connellsville region, forty miles from Pittsburg, produces more coke than any other district in the world.

Iron.—Iron is the most important metal because it is the most useful to man. Observe (Fig. 65) how widely it is distributed over the earth. Even barbarous people have learned its value; many African tribes, long before white men came among them, melted iron ore in rude furnaces to extract the iron, with which they made spear-heads, hoes, and ornaments. Iron is a cheap metal, but such enormous quantities are produced that the value of the iron mined

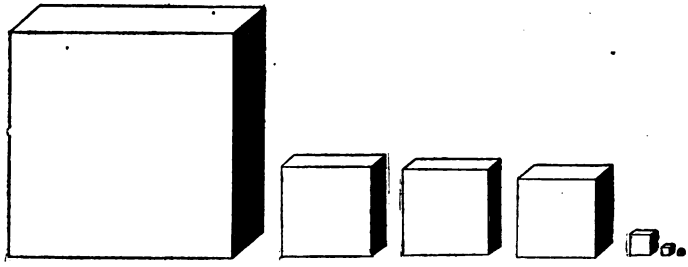


FIG. 66.—WEIGHT OF IRON ORE AND METALS PRODUCED IN 1900 (IN TONS).

The metals, in order of value, are iron ore, gold, silver, copper, zinc, lead, and tin.

every year is far greater than that of the gold produced. Fig. 66 will give you an idea of the great quantity of iron produced as compared with all the other metals.

Iron in the United States.—This country produces more than one-third of the world's iron. The amount of iron extracted from the ore in 1907 was much more than that produced by England and Germany together (Fig. 67). Nearly half of our States and Territories mine iron ore, but two-thirds of it comes from the five great ore ranges of Lake Superior. You will find the position of these ranges in Fig. 68. See how near they are to water transportation. Short railroads connect the mines with the shipping ports.

Our country makes the cheapest iron and steel in the world, because it has invented so much machinery for mining, handling, and transporting the ore, and for producing cheap pig iron and steel. Fig. 9 shows the way in which much of the Lake Superior ore is shoveled from open pits by steam-shovels into small cars at a cost of ten to fifty cents a ton for quarrying and loading. The cars carry the ore to neighboring shipping ports on Lake Superior or Lake Michigan and dump it into bunkers high above the docks. When the doors of these bunkers are opened the ore slides down chutes into the ore ships. As many of these ships carry 6,000 tons at a load, the cost per ton of

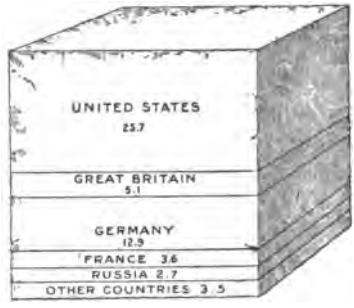


FIG. 67.—World's production of iron ore. 1907 (in million tons.)

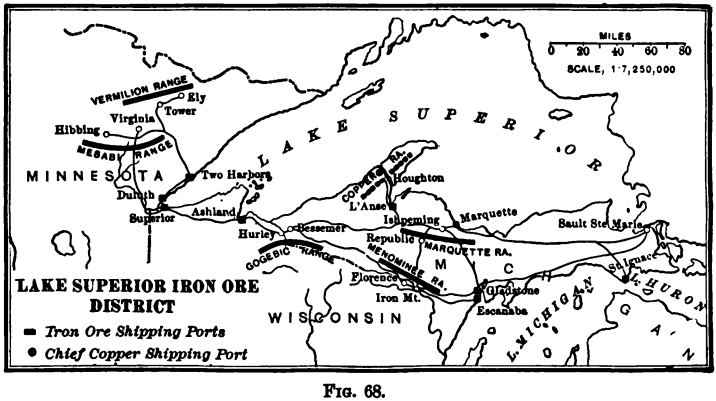


FIG. 68.

delivering it at the receiving ports on Lakes Erie and Michigan (Fig. 69) is very small.

The iron ore is carried to the coke because it is cheaper to

make iron near the great markets for it. In the Birmingham, Ala., district, however, ore, coke-making coal, and limestone needed for smelting are conveniently found near together (Fig. 70); but nearly all the Lake Superior ore is carried to western Pennsylvania, northern Ohio, Chicago, and Milwaukee for smelting, about two-thirds of it going to

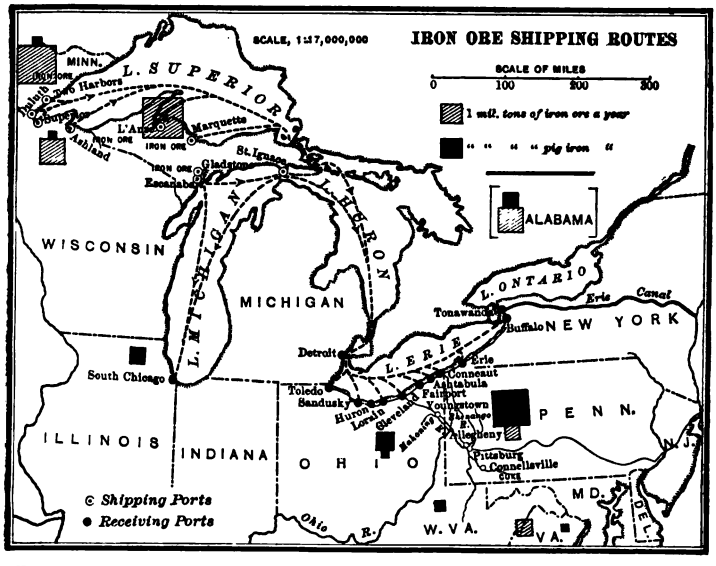


FIG. 69.—The map shows the routes through the lakes from the shipping to the receiving ports. As most of the ore is sent to smelters in eastern Ohio and western Pennsylvania, the receiving ports on the south shore of Lake Erie are of largest importance. A railroad between Conneaut and Pittsburg carries nothing but iron ore. Lake Michigan ports, mainly South Chicago and Milwaukee, also receive large quantities of ore. The distance from the mines to Pittsburg, where the larger part of the ore is used, is nearly 1,000 miles: but so economically are all operations conducted that Lake Superior ores are often mined and sold on cars at Lake Erie ports for $2 to $3.50 a ton. The map also indicates the iron-ore and pig-iron output of the chief producing States.

the region about Pittsburg, our greatest center of the iron and steel industries.

Pig iron.—Ore, coke, and limestone are needed to smelt iron ore. Figure 71 is a picture of some blast-furnaces.

Small cars carry the ore, coke, and limestone to the top of the shaft, where they are poured into the intensely hot furnace. The ore and limestone are melted and the limestone forms a paste with the slag or earthy part of the ore; the molten iron being heaviest, drops through the mixture to the bottom of the furnace, where it runs off into molds and hardens. The molds are small so that the iron in them may be convenient to handle. This is pig iron, each pig weighing about 100 pounds. It is now ready to be turned into steel or into cast iron for stoves and many other things made of the metal.

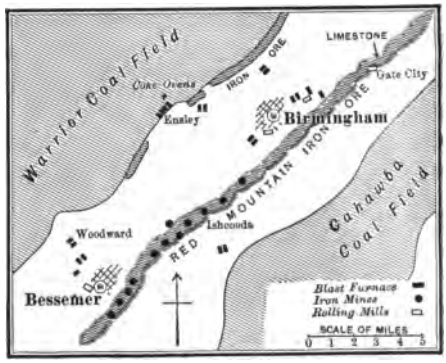


FIG. 70.

Steel.—Steel is made by melting pig iron and burning out most of the carbon it contains, so that the metal becomes harder, stronger, and more durable than iron. The frames of many buildings, boilers, rails for railroads, and a great many other things are now made of steel instead of iron. Steel saves money in numerous ways. Much heavier loads, for example, may be hauled over steel than over iron rails; one locomotive therefore pulls a much larger quantity of freight than formerly and so reduces the cost of freight. The value of pig iron is increased about tenfold by turning it into steel. The United States, Great Britain, and Germany are the largest producers of iron and steel.

Trade in iron ore, iron, and steel.—We produce about all the iron and steel consumed in our country, but have very little to export except in the form of manufactured goods. Great Britain is the only country that sends much

iron and steel to other lands; but we have the advantage of producing about all the iron ore our industries need, while England and Germany need to import large quantities from Spain and Sweden, carrying it cheaply to their blast-furnaces

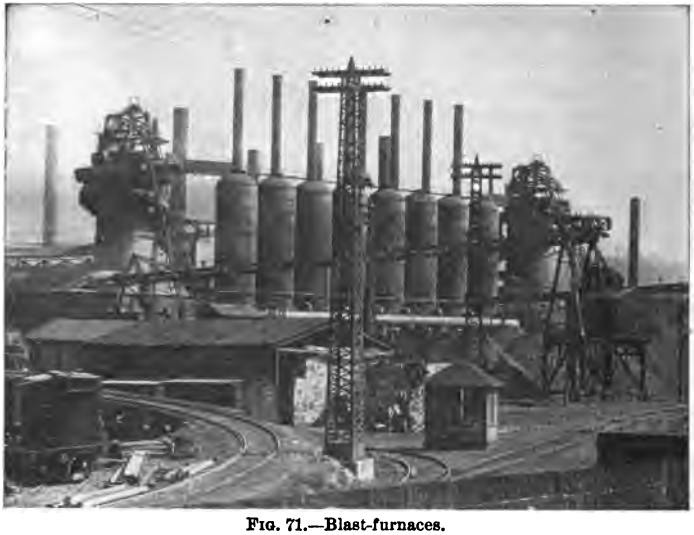


FIG. 71.—Blast-furnaces.

by sea and the inland water routes. The international trade in iron ore, iron, and steel is chiefly confined to a few European countries. The Netherlands, having no iron ore, Switzerland having little, and Italy mining little, need to import much iron.

Gold.—Gold, which dazzles the eye because it is beautiful, is used for money and ornament, but it is not so important to man as iron, copper, or tin, which every day contribute much more than gold to his comfort and convenience. Gold is mined all over the world (Fig. 60), but the greatest producing countries are the Transvaal in South Africa, the United States, Australia, Canada, and Russia. Most of it is found in quartz and other hard rocks, and is obtained by

crushing and smelting the rock (quartz-mining). A great deal also is found mixed with gravel and sand and is obtained by washing (placer-mining). The price of gold is high because the world wants much of it and it is hard to get. About four-fifths of the gold is coined into money. In some countries, including the United States, a miner may send his gold-dust to the mint, where it is coined free of charge; but in most countries a small charge is made for coinage. The beauty and value of gold also make it highly prized for ornamentation. This demand for the metal absorbs about one-fifth of the annual product, the gold being turned into many forms of jewelry, watch cases, and other solid or plated wares. Gold hammered out very thin, (gold-leaf) is used for gilding and in dentistry. It is too soft to be used pure and it is therefore alloyed with copper or other metals. Pure gold is called twenty-four carats fine. If you see a watch case marked "fourteen carats" it means that the case is fourteen parts gold and ten parts alloy.

Silver.—Silver is mined in many countries, but more than half of it is obtained in the United States and Mexico (Fig. 60). About one-sixth of it is used in all parts of the world for small coins, the remainder being employed in the arts; thus the greatest usefulness of silver is in the form of many manufactures of the metal, while, as we have seen, the greatest usefulness of gold is in the form of money. Because both gold and silver are beautiful, highly prized, and difficult to get, they are called the precious metals. Most of the jewelry and other wares made of them in our country are manufactured in the Eastern States. France exports more gold and silver wares than any other country because her goods have long been regarded as excelling in design and finish. We sell very few of our fine goods abroad, but in prosperous times we import large quantities, most of the jewelry coming from France.

Copper.—Every continent produces copper, but our own great mines give the world more than half its supply, Spain

being the next largest producer (Fig. 60). The copper ores near Butte and Anaconda, Mont., are the greatest sources of the metal in any country. The ores of Arizona and the pure copper raised from great depths on the southern shore of Lake Superior also yield very large supplies (Fig. 68). Copper being an excellent conductor of electricity has been in greater demand in the past few years, since all the leading nations began to make many appliances for the use of electricity in running trolley-cars and driving machinery. All the most important European countries, needing to import copper for their electrical industries, buy nearly all the metal we have to sell. Our country is the largest exporting nation, most of our shipments going from New York and Baltimore because so large a part of the metal is sent to those cities to be refined.

Brass.—Copper and zinc are melted together in the proportion of about two parts copper and one part zinc, the resulting alloy being brass. Next to iron it is the most important metal in the arts, because it is easily worked, its color is acceptable, and it is thus adapted for many purposes such as musical instruments, machine trimmings, buttons, and tubes. Most of the brass used in the United States comes from Connecticut. All European countries have to import brass.

Tin.—The tin utensils in our kitchens are made of sheet iron or sheet steel covered with the bright, soft metal tin. The sheets of iron or steel thus prepared are called tin plate. More than 300 tin-plate mills in the United States are kept busy supplying the plate from which our tinware is made. Tin is very sparsely distributed (Fig. 65), the Straits Settlements and two islands near them in the East Indies producing most of it, though important supplies come from Cornwall in England, Bolivia, and Tasmania. Our imports of tin are very large.

Zinc.—This is a hard metal used in making brass and coating iron (galvanized iron) and copper to protect them

from moisture. Our largest supplies come from the Galena-Joplin district in Kansas and Missouri. We need to import only a small quantity.

Lead.—This soft metal used for water-pipes, roofing, and other purposes is a large product of our silver-mining regions, where it is combined with silver ores. This country, though the largest producer, imports much lead from Mexico. Great Britain buys lead from Spain, the second largest producer. These two importing countries consume four-sevenths of the world's supply (Fig. 60).

Aluminum.—This light, white metal, found in many rocks all over the world, is used for making numerous articles in the place of wood, iron, brass, and tin, such as racing boats, toys, ornaments, and kitchen utensils. It was not discovered till recently how to extract it cheaply from the rocks containing it. The product is still small, our country supplying half of it, about fifty million pounds.

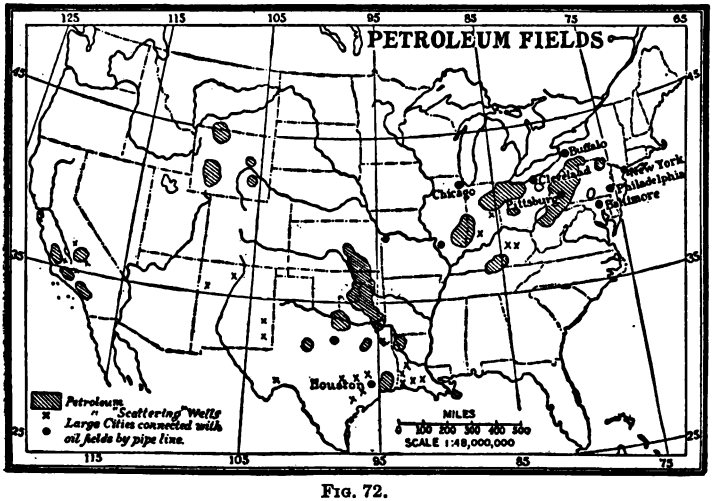


FIG. 72.

Petroleum.—This is an oily substance that collects in reservoirs under the earth's surface and is usually obtained

by boring. About fifty years ago a method of refining it was discovered and glass chimneys for lamps were invented so that refined petroleum (kerosene) might be burned without smoking; since then kerosene has become the most widely used illuminant.

FIG. 73.—PETROLEUM TANK STEAMER.
Workmen are connecting the pipe with the tanks preparatory to pumping the oil into the vessel.

The greatest producers are the United States and Russia (Fig. 65). Russian petroleum is best adapted for fuel, taking the place of coal or wood in the furnaces of locomotives, steamboats, and other machinery. The use of fuel oil is rapidly increasing, and we now supply large quantities from our Texas fields; but the oil from Pennsylvania and Ohio (Fig. 72) is best for refining, so that our greatest product is kerosene. Gasolene, a volatile liquid obtained from the distillation of petroleum, has been used chiefly in automobile engines since the invention of the gas engine or carbureter.

This power drives most automobiles, farm tractors, etc. It has enormously extended the use of petroleum.

Kerosene, which we send to every land the world over, has a wider sale than any other of our exports. Most of it is pumped into great tanks on oil steamers, but some is sent in tin cans (Fig. 73). In many ports, even in India, it is pumped from the steamers into tank-cars which distribute it to thousands of cities and villages. Camels carry the cans in North Africa, mules in South America, and wheelbarrows in Chinese cities. The largest buyers are the countries of Europe and South America, Japan, China, and Australia. Russia is our largest competitor in foreign markets, but even in Russia much American kerosene is sold.

Sulphur.—Sicily and south Italy produce about 850,000 tons of sulphur a year, while all the rest of the world yields only about one-thirtieth as much. As sulphur is important in the industries, all the manufacturing countries import a great deal of it. Refined sulphur (the brimstone of commerce), is used in the manufacture of gunpowder, for vulcanizing rubber, and in medicines; sulphuric acid is necessary in the manufacture of many common articles like window-glass and kerosene. These are some of the ways in which sulphur and its products add to the comforts of life.

Building-stones.—Nearly every country quarries its own stone for the walls and roofs of buildings, monuments, and other purposes. Limestone, granite, sandstone, and slate are the most useful varieties; slate, for roofing, being the only considerable export from the United States. Most of our tombstones are made of Vermont marble. A very superior marble quarried at Carrara, Italy, is used by sculptors for making statuary.

Clay products.—Clay is used in nearly every State of the Union for making brick, stoneware, the crockery of our kitchens, and other articles. A kind of clay known as kaolin is in large demand for making white or decorated chinaware. The largest manufactures of these goods are at

Trenton, N. J., and East Liverpool, Ohio, near the greatest supplies of china clays. In addition to our immense home supplies, we buy a great deal of foreign stone and china-ware from England, Germany, and France.

Salt.—As nearly every country produces most or all of the salt it needs it is not a large article of international trade. It is used for the table, as a preservative of foods and hides, and in the manufacture of soda, glass, and other articles.

Precious stones.—The diamond is, with the exception of the finest rubies, the most costly of precious stones (Fig. 65). Most diamonds come from the Kimberley mines in South Africa. The blue earth containing the rough stones is shoveled into buckets and hoisted to the surface, where it is spread on the ground till the influence of the sun and air has softened the earth so that washing machines may easily separate it from the stones. London buyers go to Kimberley in March every year, and purchase the year's output, which is sold to diamond-cutters in Amsterdam, Belgium, Paris, and New York, who prepare the stones for the trade. Brazil yields a small supply of the finest diamonds. Burma is the largest source of the ruby, Persia of the turquoise, and the Ural Mountains and Colombia of the emerald. We import nearly all the precious stones in our jewelry trade.

This chapter has included only the most important of the mineral products and industries; but the many facts given show how vast are the treasures dug from the earth and how great are the industries that prepare them for the uses of man.

CHAPTER XI

THE UNITED STATES—(*Continued*)

Distribution of manufactures—The leading industries.

Profits on manufactures.—The profits made on manufactured goods are much larger than on raw materials. Suppose we should sell a large amount of pig iron to England; as pig iron is cheap our profit could not be large; but the English would turn the pig iron into steel, and the steel into needles, scissors, rails, wire, machinery, and hundreds of other things that are in great demand. The needles, scissors, and many other articles would be worth hundreds of times as much as the iron we sold. All these articles would pay a good profit, and the English would reap all the benefit of increasing the value of the raw material we sent to them.

The United States first in manufactures.—For many years we have been the greatest agricultural nation, because we produce far more breadstuffs, meats, and raw cotton than any other country. But it was not till the last years of the nineteenth century that we became the greatest manufacturing nation of the world. The country's marvelous increase in wealth is due to the fact that it not only produces the greatest quantity of raw materials, but also manufactures most of them at home; the value of our manufactures is nearly double that of the manufactures of Great Britain. Nine-tenths of all the products of our thousands of mills and shops is consumed at home, yet we have a large surplus for export.

Regions of largest manufactures.—There are numerous reasons why one region may have a great many factories and shops while another district has but few of them. In the first place the greatest number of factories are usually found where the largest population lives, for there are found the largest supply of labor and the greatest number of buyers for the products. Study the distribution of population shown in Fig. 74. The areas covered by the two

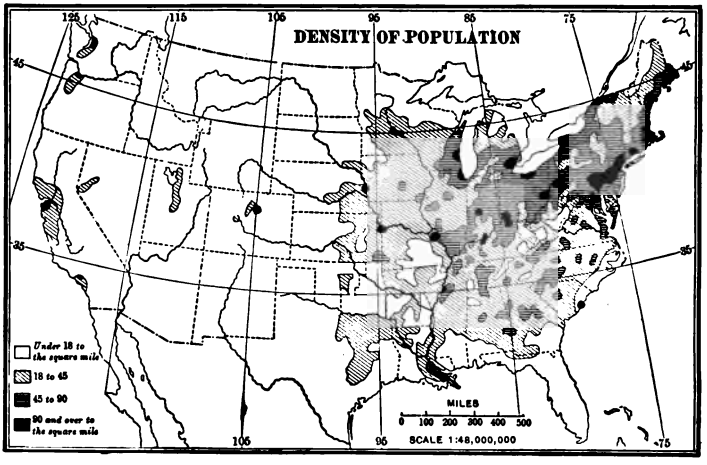


FIG. 74.

darker shades show where the population is most dense; it is there that the largest part of our manufactures is produced. Railroads cover these regions like a fine network. Because the vast population needs large supplies of everything, there is abundant transportation to bring raw materials to the factories and to send goods from them to the markets.

Factories near sources of supplies.—Many factories are also placed near the sources of supply of the raw materials used; thus the greatest iron industries are in Pennsylvania, near the largest source of the coke used in iron smelting;

the most flour is milled on the edge of the hard wheat region of Minnesota; the greatest center of cotton manufactures is on Narragansett Bay, where raw cotton and coal may be cheaply delivered by water; and hundreds of cotton-mills in the Southern States now work up the product of the neighboring fields. Peach canning is largest in the peach-growing regions of California, Maryland, New York, Delaware, and Michigan. Salmon is canned on the Pacific coast and in Alaska, where the fish are caught. Lumber and news paper mills are mostly near the forests of pine, spruce, and other timber. Most of the New Jersey and Georgia peaches are sent to New York and other markets as fresh fruits.

Power.—Power to drive the mills is a great influence in determining where they shall be built. The many water-

FIG. 75.—A fine water-power.

falls in New England rivers were a great source of power before the days of steam; this fact gave that part of the

country the supremacy in manufactures which it still holds. Waterfalls made manufacturing cities of Trenton, Philadelphia, Richmond, and many other places. Water-power will soon be of greater importance than ever as electrical transmittance of power is perfected (Fig. 75).

Coal.—As coal makes steam-power, the greatest manufactures are in regions where coal may be cheaply obtained. A large stove factory in a prairie town of the West proved to be a failure, because it cost so much to bring coal and cast iron that the factory could not compete with others which were nearer those supplies.

Variety of manufactures.—As population increases there is a demand for larger variety of goods, and many new forms of industry are introduced. Not many years ago the Western States made little except farm machinery and other articles for hard, every-day use; they now make a great many of their pianos; a large number of the gold and silver watches made in this country come from Illinois factories, and there are only four cities which make more jewelry than San Francisco produces. All the home markets are thus being supplied with more and more things that are made near to them.

Our manufacturing advantages.—When Great Britain, Germany, France, and Belgium mined more coal than we produced, had larger capital with which to build and operate factories, and better transport facilities, they made more goods and sold more to foreign countries than the United States. We have now all the advantages they possess, excepting cheap labor; and thousands of labor-saving machines, invented in this country, enable it to pay good wages and still compete with the products of European cheap labor in all foreign markets. One man, for example, can produce as much cotton cloth to-day as several hundred people could weave a century ago. Making cotton goods and many hundreds of other things, both well and cheaply, we are able not only to supply

the home markets, but also to sell to millions of people in foreign lands.

Our greatest manufactures.—In 1914 the value of our iron and steel products was greater than that of any other of our manufactures. The meat industries, lumber, flour, and cotton goods came next; earlier chapters in this book have told about these and other industries. A few other great manufactures not yet mentioned will now be briefly described.

Boots and shoes.—We make far more leather footwear than any other country. Two-thirds of the boots and shoes come from factories in Massachusetts and other New England States, though great quantities are made in New York city, Rochester, Philadelphia, Chicago, and St. Louis. Brockton, Mass., is the greatest shoemaking town in the world, and Boston, handling nearly all the New England goods, is the largest shoe-distributing center in the country. The cobbler used to make boots and shoes on a lap-stone, plying the hammer and knife, and sewing by hand. Machinery has done away with all these primitive methods, and so reduced the cost of production that we can make some grades of shoes much cheaper than they are made in Germany, though we pay larger wages. Our exports are growing rapidly; even England and Germany, although both countries are great makers of shoes, buy many of our products.

Leather.—No country which makes a great deal of leather has hides enough at home to supply its needs. The millions of cattle killed in the United States provide only a part of the leather required by our trade. This country and some European states import large quantities of hides, mainly from Argentina, Uruguay, and some European countries. When these hides reach the tanner he cleanses them, removes the hair, and then applies hemlock or oak bark, or other tanning stuffs, which act upon the gelatin in the hides, and convert them into leather. A method of tan-

ning by the use of chromium compounds, applied in Philadelphia about fifty years ago, produced a superior leather, and made that city the largest leather manufactory in the world. Millions of kids and lambs, particularly in south Europe, supply skins for kid gloves. Morocco leather is made of goatskins. Horse hides and pigskins make the best saddles; the skins of many other animals are also used in the leather industry. We export a great deal of leather, mainly to Great Britain and other European countries; our imports, however, are much smaller. France exports more goods made of leather than any other country, chiefly because her kid gloves are in such wide demand.

Machinery.—This country makes more machinery than any other, because nowhere else has hand labor been so far supplanted by machinery as in the United States. Foundries and shops for making machinery are widely scattered over the Northern States. American seeders, self-binding reapers, plows, and threshing-machines are known and used in most foreign countries. About one-fourth of the value of the machinery we make is in farm machines and implements. The largest factories for these farm machines are in western New York, in the Lake regions, and in the Mississippi Valley, where the farming interests are greatest. The leading countries of Europe, Argentina, Canada, and Australia buy a great many of our mowers, reapers, plows, cultivators, and other farm machines. Making automobiles is now a great industry.

The life of a locomotive is about twenty years. As our thirty great works for building locomotives are able to turn out over 3,000 a year, while we need for use on our own railroads only about 2,500 annually, we are able to make many machines for Great Britain, Siberia, Sweden, France, Egypt, and other countries.

More than thirty companies make sewing-machines, and as our machines compete successfully with all foreign makes, the United States sells a great many abroad. We

now import very little hardware except cutlery, because our nails, hinges, tools, locks, wire, and many other products are so cheap and excellent that they not only fill the home demand, but are bought by foreign countries.

As long as ships were built of wood we were one of the greatest ship-building nations; but when iron and steel took the place of wood in ship-building our industry languished, because we could not compete with England, which made cheaper iron and steel. Now that we produce those products cheaply, our ship-building has revived, and the great yards at Philadelphia, Sparrow Point, Md., San Francisco, Cleveland, and other cities on the seaboard or Great Lakes are turning out many iron or steel ships.

Most of our ready-made clothing for men and boys is made in the large cities, New York leading with 50,000 tailors engaged in the industry. The business is peculiar in that it is usually carried on not in large factories, but in small shops or in the homes of the tailors; thus one manufacturer may have his goods made in hundreds of different buildings. The reason for this is, that little work is done at some periods of the year, and manufacturers do not wish to invest in large factories that would be idle a part of the time. The small shops and workrooms, consuming the enormous output of our woolen-cloth mills, make two-thirds of the clothing worn by men and boys in this country, the remainder coming from the tailors who make suits to order.

Most parts of the country have sand adapted for glass-making, of which we produce so much that we import far less than Germany, Austria, Belgium, France, or Great Britain, all of which are great glass-manufacturing countries.

Only a few of our manufactures have been mentioned in this and previous chapters; but a sufficient number have been included to give an idea of the enormous development and variety of our manufacturing industries, whose total product now so surpasses that of any other nation.

CHAPTER XII

THE UNITED STATES—(*Continued*)

Transportation, seaports and other trade centers.

Large transport facilities.—When thousands of gold seekers flocked to California in 1849 they were months on the way, toiling painfully over the dusty plains with pack animals and wagons (Figs. 76 and 77); but the journey across the continent is now made by fast express trains in less than five days (Fig. 78). Our country could never have become the great commercial nation it is if many railroads had not been built, even in the thinly settled regions, so that (1) freight may be carried very quickly from every part of our country to every other; (2) the prices charged for carriage are, on the whole, the lowest land freight rates in the world.

FIG. 76.—Across the continent, 1849.

Freight rates are cheaper still on the Great Lakes, the navigable parts of our rivers, and the canals, which provide about 20,000 miles of water navigation.

Think how wonderfully we profit by our vast system of cheap land and water transportation! Argentina raises her export wheat within 100 miles of the steamships on the Rio de la Plata that carry it to Europe; we must send our export wheat 1,000 miles to the sea, but cheap freight charges help to overcome this disadvantage. All the large factories of Great Britain are within 50 miles of a seaport, but our low freight charges help factories in the Mississippi Valley to compete in foreign markets with British goods. Our transportation system thus helps to enlarge our export trade.

FIG. 77.—A "prairie schooner."

Railroads.—More than a third of all the railroads in the world are in this country (Fig. 79). Observe in Fig. 80 the great lines extending east and west across the continent—the Great Northern, from St. Paul to Seattle; the Northern Pacific, from St. Paul and Duluth to Seattle; the Union and Central Pacific, from Omaha to Tacoma and San Francisco; the Atchison, Topeka, and Santa Fé, from Chicago to San Francisco, and the Southern Pacific, from New Orleans to Los Angeles and San Francisco. These lines with their eastern connections form roughly parallel highways from the Atlantic to the Pacific Oceans. Every one of our ports on either ocean has rail connections with the other ocean; and all the

FIG. 78.—Across the continent to-day—mail express.

great trade centers of the interior, such as Chicago, St. Louis, Indianapolis, and Memphis, have direct rail connections that give them speedy access to all our ports on both oceans.

East and west lines.—These lines are more important than any others because (1) they extend to the seaports having the largest coastwise and foreign sea trade, and (2) pass through the largest manufacturing regions where population is most dense, and the demand for food supplies and raw materials for the factories is greatest.

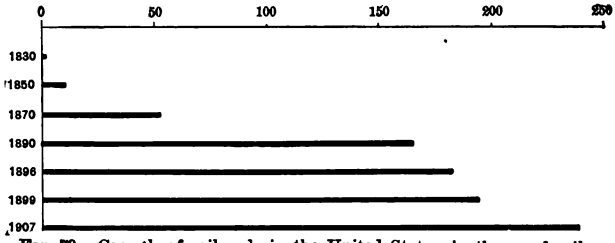


FIG. 79.—Growth of railroads in the United States, in thousand miles.

North and south lines.—The increase in the population, and in the cotton, sugar, furniture, and other manufactures of the Southern States, and the growing ocean trade of the Gulf of Mexico ports, are constantly making the north and south lines of railroad more important. They carry export grain to New Orleans and Galveston for shipment, and thus, by competing with the east and west lines, help to keep the grain freight rates at a low figure.

Freight cars.—About 2,000,000 freight cars are running on our railroads. They carry much over a billion tons of freight every year to all parts of the land. If they were placed end to end they would make a solid train from New York to Chicago; then across the great plains to San Francisco, and on again over the Pacific through the Hawaiian Islands to Tokio, the capital of Japan; from Tokio to Hongkong, and from there to Manila, the chief city of our most distant possessions, the Philippine Islands. In the fall

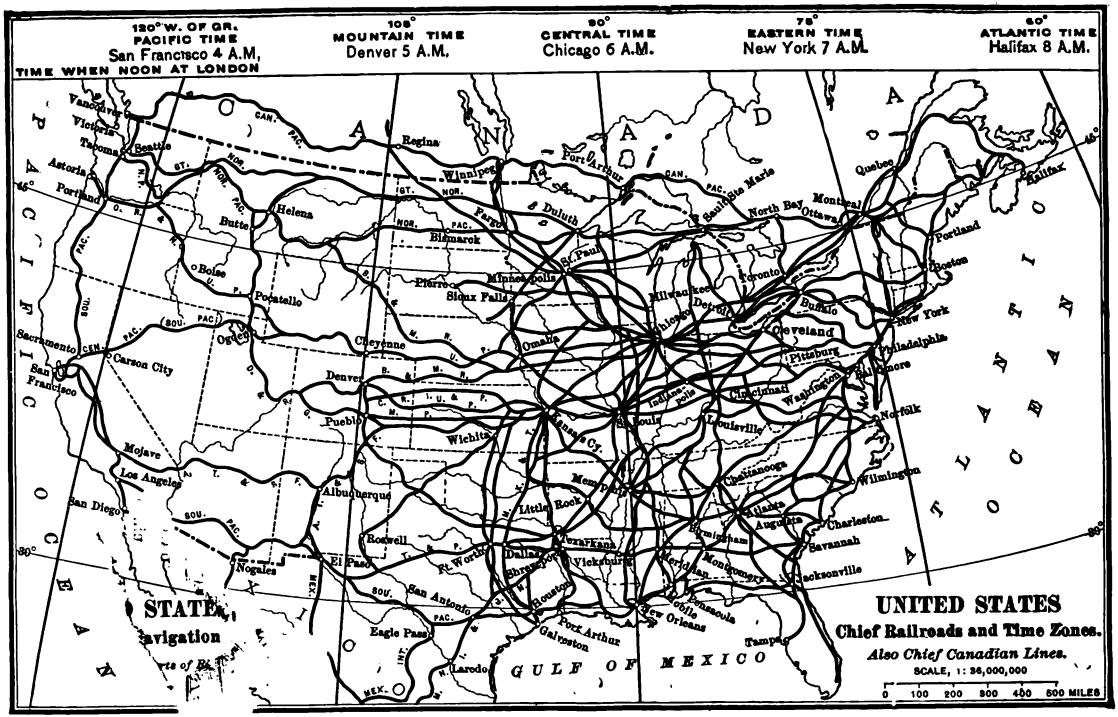


FIG. 80.—Only main l[illegible] railroads are shown on this map. They have hundreds of feeders, the entire railroad system covering the eastern half of the country like a fine network. Observe the convergence of lines at the chief commercial points; also the five time-zones, differing by one hour, used for railroad and telegraph purposes in the United States and Canada.

and winter, when wheat and maize shipments to Europe are very heavy, thousands of these cars bring loads of grain to the seaports and return empty to the west for more grain. In the spring another story may sometimes be told. In April, 1892, for example, after the grain shipments fell off, scarcely sufficient freight cars could be obtained to move eastern manufactures rapidly enough to the western buyers, while thousands of empty cars returned east for more goods. This state of affairs showed that the country was prosperous, nearly everybody having considerable money with which to buy manufactured articles.

Powerful locomotives attached to large steel or wooden freight cars, and running on heavy steel rails, haul from 40,000 to 50,000 bushels of wheat or maize in one train.

The Great Lakes.—These lakes, commercially the most important fresh-water lakes in the world, carry far more freight than all our rivers together. Some of the lake steamers are larger than many ocean steamships, carrying 6,000 tons of iron ore or 250,000 bushels of wheat at a load. The lakes form a splendid east and west highway, 1,000 miles long, from Duluth, at the head of Lake Superior, to the St. Lawrence River, at the foot of Lake Ontario. This river, and the Erie Canal, from Buffalo to the Hudson, give the lakes two fine water outlets to the sea, so that a great deal of grain, lumber, and other heavy commodities is carried by water from the heart of the continent to the Atlantic at cheaper rates for freight than they can be carried by rail (page 28). As the rapids in the St. Marys River, between Lakes Superior and Huron, pre-

FIG. 81. THE CANADIAN CANALS.
The Soo Canal [illegible] nine-tenths of the freight and most [illegible] passenger business; its freight tonnage in 1905 (over 43,000,000 tons) was more than five times that of 1889.

FIG. 82.—On the basis of three feet as the minimum depth of navigability, the rivers afford over 14,000 miles of navigation, measured in straight lines, and much more following the sinuosities of the streams.

vented navigation, two canals were built, the Soo (United States) and Canadian canals, more than five times as many vessels passing through these canals every year as through the Suez Canal (Fig. 81).

The largest freight movement from west to east, through the lakes, is iron ore, copper, lumber, wheat, and flour; the largest movement from east to west is coal and general merchandise, mostly bound for Chicago, Detroit, and the upper lake ports.

Rivers.—The National Government expends a large sum of money every year to improve river navigation. It is expected that, before very long, such improvements will enable New Orleans to obtain coal by cheap water-routes from Alabama mines. Observe in Fig. 82 the short stretches of river navigation on the Atlantic and Gulf coasts, by which, in the Southern States, cotton, lumber, and other products are brought down to the seaports.

The short Hudson River carries more freight than any other river in the country, extended as it is by the Erie Canal to Chicago and Duluth, making the commerce of the Great Lakes directly tributary to the Hudson.

FIG. 83.—Mississippi steamer.

The Ohio, coming from a great region of iron, steel, coal, and machinery, distributes among the towns on its banks freight weighing as much as all the grain, lumber, and other products floated on the Mississippi. The Ohio coal fleets, 30 to 40 barges towed by a single steamer, carry coal from Pittsburg to New Orleans at rates that are among the lowest freight charges in the world (Fig. 83).

The Delaware comes after the Ohio and Mississippi, most of its commerce being ocean freight to and from

Philadelphia. Our map shows that only about 900 miles of river navigation is tributary to the Pacific Ocean. On the whole, our rivers carry an enormous amount of freight, and by their competition with many railroads, help to keep land transportation rates at a low figure.

Canals.—The leading canals are indicated in Fig. 82. Their importance has declined with the growth of rail-

FIG. 84.—A LOCK ON A CANAL.
At the locks the boats are raised or lowered to the increased or diminished level of the water.

roads, and many of the small canals have been abandoned. The most useful among them is the Erie Canal, which brings grain, lumber, iron, coal, and other heavy and bulky products from the West, and sends from the East merchandise that will bear slow transportation. It united the Atlantic with the Great Lakes before the days of railroads, and made New York our greatest seaport. The canal has now been enlarged so that it accommodates larger boats; and steam power is used instead of animal traction, so that the journey may be made more speedily.

Ocean routes.—The coasting trade of the United States is the largest in the world. New York, Boston, Philadelphia, and Baltimore are each connected by steamship lines with other Atlantic and Gulf ports; San Francisco also has a large sea trade with Portland, Ore., and the Puget Sound ports. The coasting trade is reserved by law to vessels under the American flag.

Our near-by foreign ocean trade is with Canada and Latin-American ports on the Gulf of Mexico and the Caribbean Sea. It is less than one-fifth of our foreign sea trade, and half of it is carried in our own vessels.

Fig. 85.—Ocean vessel at her dock.

Our deep-sea trade with far-off countries is over four-fifths of our total foreign commerce, only about one-twelfth of it being carried in United States vessels; but our shipyards are now adding new vessels every year to our deep-sea merchant marine, and it is hoped that before many years, as before the civil war, we shall again transport a very large part of our deep-sea trade (Fig. 85).

Seaports.—The greatest seaports are on our northern Atlantic coast, facing the Old World, and nearest to the leading commercial nations of Europe which are our best customers.

New York, the second largest city and port in the world, has a greater number of regular steamship connections with Europe, from Scandinavia to Italy, than all our other ports together. About fifty steamers in the foreign trade leave New York every week, carrying a third of all our exports; and on the return voyages they bring more than a half of all the imports of the country. New York is the greatest outlet for breadstuffs, provisions (as the meat and dairy products are called), and kerosene. These products and

cotton form half of its exports. Most of the coffee, dry-goods, rubber, wine, and many other articles come in through New York. Nearly all our seaports develop manufacturing in proportion to their population, New York being the largest manufacturing city in the country.

Boston, our second port in importance, is a large cotton, leather, and wool market. It has a very large part of the export and import trade of New England, and ships many Western food products to foreign countries.

Philadelphia, the third port, is on the Delaware, 120 miles from the sea, the river being deep enough to carry vessels to the port at low tide, making Philadelphia one of the finest of river seaports. The port has regular connections with Liverpool and Antwerp, and imports a great deal of wool for the carpet factories, and raw sugar from the West Indies to be refined.

Baltimore, the fourth of our great world ports, 160 miles from the sea, is nearer to the Mississippi Valley than is New York, is second in the export of maize, flour, and tobacco, and is surpassed only by New York and Boston in the export of wheat. The fact that it is the center of the largest source of oysters in the world, and of one of the finest fruit regions of the country, adds much to its shipping business.

Galveston is the largest cotton shipping port in the world, New Orleans, 107 miles from the mouth of the Mississippi, being the second. Many other Atlantic and Gulf ports have important coastal and foreign trade for the regions directly tributary to them.

The larger part of the wheat, lumber, flour, and other exports of San Francisco go to Europe; the larger part of the imports come from Asia and the territory of Hawaii. It receives nearly all the raw sugar of Hawaii, is the largest importer of teas and raw silk from China and Japan, and has the chief share of the Australian trade. Though San Francisco is the central distributing point for all the Pacific

coast, the Puget Sound ports, Portland, Ore., and San Diego are steadily increasing the volume of their sea trade.

Lake ports.—With the vast mineral, forest, and agricultural resources around the Great Lakes, it is natural that many of our most important cities should be situated on their shores. Their position and the resources near at hand give many of them special advantages in the lumber, flour, ship-building, and a few other industries.

Duluth, Superior, and the iron-ore shipping ports (Fig. 68) are the main points for collecting and distributing the commercial products tributary to Lake Superior.

Chicago, Milwaukee, Detroit, Toledo, Cleveland, and Buffalo are the main points for collecting and distributing the commercial products tributary to the other lakes.

Chicago, the great trade center of the north-central part of the United States, is the second city in the country. It is the largest meat-packing point, and the largest distributor of grain, meat products, and lumber in the world, and has many manufacturing industries. Duluth, Superior, and Milwaukee, after Chicago, are the largest shippers of grain.

Cleveland is the chief lake port of Ohio, and has ship-building and many other large industries. Buffalo is the great eastern terminus of the lake trade, except that which passes through the Erie Canal to the Hudson, or through the Welland Canal into Lake Ontario. Many lines of railroads center at all these lake ports and compete with the steamers for the carrying trade, and especially for the shipments of grain and lumber. Even though rail freight charges are somewhat higher, practically all the provisions and the larger part of the grain are carried by rail, as rapid transit is desired.

River ports.—St. Louis is the largest river port in the country, being the commercial center of the Mississippi Valley, and therefore attracting a great trade. It commands more of the Mexican trade than any other city. A town was sure to rise at the large bend of the Ohio where

river freight not destined for the new direction the Ohio takes was put on shore for the land routes; this fact gave rise to Cincinnati, the chief port of the Ohio Valley. The two rivers that form the Ohio bring coal to Pittsburg; coke is near at hand, and the short rail routes from Lake Erie supply iron ore: these facts have made Pittsburg the greatest center of the iron and steel industries. The rapids in the Ohio, before they were improved, required the transshipment of freight between the river and land routes which gave rise to the city of Louisville, a large manufacturing and commercial point. The great stock- and grain-raising region tributary to Kansas City made it, after Chicago, the largest meat-packing center in the world, Omaha being third in this industry. A large town is sure to rise at the head of navigation on important rivers; to this fact St. Paul, Albany, and many other cities owe their commercial importance. Memphis, at the head of navigation for the largest vessels on the Mississippi, is naturally the chief commercial point between St. Louis and New Orleans.

Many of our cities like Indianapolis, Denver, Fort Worth, Tex., and others, that have no great rivers at their doors, owe their prosperity to the fact that they are great railroad centers which make them collecting and distributing points for a large district around them. Many other cities have arisen all over the country at central points for trade or at places where goods may be manufactured most cheaply.

CHAPTER XIII

THE UNITED STATES—(*Continued*)

Foreign trade of the country—The world's trade.

Our total foreign trade.—The products which the United States sold to foreign countries in 1913 and the products it brought from them were worth more than $4,278,000,000. This great sum is over twice the value of all the goods produced in the 40,000 factories and shops of New York City in one year. Every work-day, from January to December, products worth over $13,000,000 came into the country or passed out of it. No other country, except Great Britain, sold so much to other nations; no other countries, except Great Britain and Germany, bought so much from other nations. In our foreign trade, therefore, we are included in the three leading nations; but if we count in our domestic trade also (page 2), the United States heads the list of all trading peoples.

More exports than imports.—We sell to foreign countries much more than we buy from them (1) because we are the largest supplier of many of the necessities and conveniences of life, such as food, cotton, and kerosene; (2) our heavy tariff upon many foreign goods makes the cost of importing them so high that they can not be sold here in competition with similar products of our own country; (3) our machinery and skill in using it have so increased our power to produce good, cheap manufactures, that we are now able to sell millions of dollars' worth of these goods in foreign lands; (4) we are depending less and less upon foreign

products—for example, European makers of silks, glass, watches, and woolen goods have lost a great deal of trade since our own mills and factories began to supply us with most of these things; we once depended upon southern Europe for lemons and oranges which are now a large product of California; we are producing our own wines, raisins, prunes, and olive-oil, and are even selling them in other lands.

It is not natural, however, that one country should always sell to other countries a great deal more than it buys from them. Some day there will be a more even balance between the value of our sales to other lands and our purchases from them. This day is rapidly approaching.

Nearly a third of our exports are manufactured goods; nearly two-thirds are the foodstuffs of our farms and grazing lands, and the cotton of our Southern plantations; forest products, the mineral industries, including kerosene, and the fisheries, make up the remainder of our sales abroad.

Europe is not only the greatest customer for our products, but every other continent buys little from us as compared with Europe. More than two-thirds of everything we sold abroad in 1900 went to European countries; and the little islands of Great Britain bought nearly half of all we sold to Europe. These facts show that though trade is world-wide, most of it will always be between the nations that have reached the highest industrial development; they also show why the Atlantic far surpasses all other seas as a commerce carrier.

After Europe, the rest of North America is the largest buyer of United States exports, our neighbor Canada taking about half of them, the West Indies more than one-fourth, Mexico one-sixth, and Central America the remainder. Asia is the next largest buyer, with Japan, China, and India as the best customers. South America follows, with Argentina and Brazil buying about one-half of the

products we sell to that continent; then come Oceania and Africa, the latter buying only about a fifth as much as we sell to Canada.

Imports.—Nearly one-half of the imports are raw materials for our mills and factories, such as silk, hides and skins, tin, and rubber; or partly manufactured materials, from which we make many products, as raw sugar and leather, jute, henequen and other fibers. Every day we expend a million dollars for these and other materials for our factories and workshops. Many of these things come from Europe, as well as from tropical and other temperate regions; they are substances which we do not produce at all, or in insufficient quantities. Coffee, tea, cacao, and tropical fruits make another large part of our imports.

Europe sells to us a little more than one-half of our purchases from other lands. Great Britain is the largest source of our foreign supplies, Germany being second, France third, Brazil, with its coffee and rubber, fourth, and Japan, with its silks and distinctive manufactures, fifth.

Since we are constantly increasing our manufactures, the tendency is to buy from other countries more raw materials for our industries and fewer manufactured products. Great Britain is by far the largest foreign market in which we sell and buy, because that country needs large quantities of our cotton and foodstuffs, amounting, in value, to about one-fourth of all her overseas purchases; while we still find it advantageous to buy from her a great many manufactures.

Growth of the world's trade.—The volume of trade between all the countries of the world has doubled in the past forty years. There are many reasons for this vast increase in commerce. The population of the world, now estimated at 1,500,000,000, is continually growing. It is believed that all the people of Europe at the beginning of the Christian era numbered only about half of the present population of European Russia alone. Commerce has also been extended to parts of the world which a century ago

were inhabited only by barbarous tribes, or by nations like China and Japan, that would not trade with other peoples. Above all, steam-power applied to many forms of machinery has made it possible to produce many of the things we use so cheaply that a great many articles which once were luxuries enjoyed by the few are now found in every home. In recent years it has been the fortune of the United States, with its enormous production of cheap food and cheap machine-made goods, and its vast purchases of raw materials, to swell the number of buyers and sellers in every land, thus increasing the volume of the world's ever-growing trade.

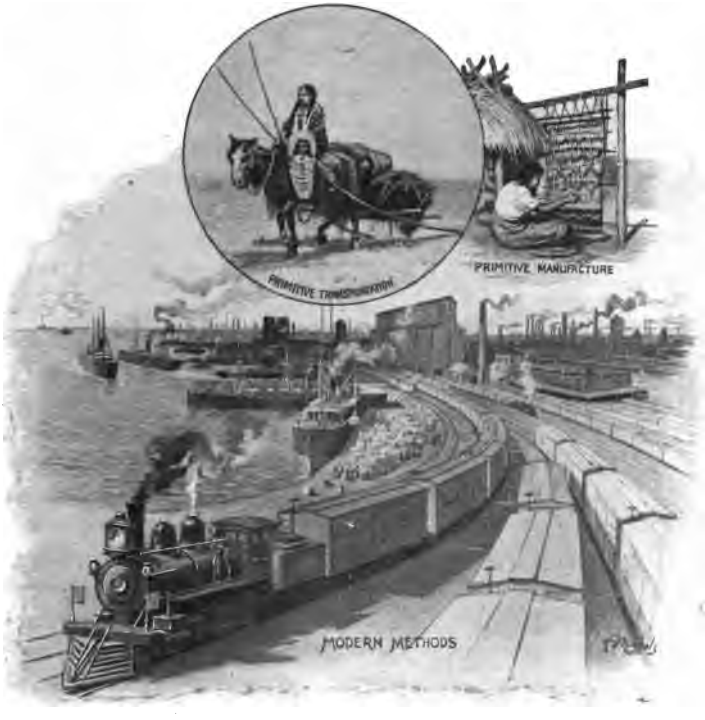


FIG. 86.—Primitive and modern commerce.

CHAPTER XIV

COLONIES OF THE UNITED STATES

Porto Rico, Territory of Hawaii, Guam, Tutuila, the Philippines.

Porto Rico.—This is the smallest and most eastern island of the Greater Antilles (Fig. 87). Because of its fertility and healthfulness, the population is large in proportion to the extent of the island, which is hardly greater than our two smallest States—Delaware and Rhode Island—and is considerably smaller than Connecticut. Here a million people live in a climate which, from the constant trade-winds blowing from the east, is superior to that of the neighboring isle of Cuba. The population is becoming too dense and the question of relief through emigration is beginning to be discussed.

Topography.—A range of low mountains extends east and west, a little south of the center, forming the water parting between the north and south rivers. As the moist trade-winds precipitate most of their rain on the north slope of the mountains, the northern part is better watered than the southern part. The northern streams are larger than those of the south, and are navigated by flatboats, barges, and canoes, which carry the produce of the interior to the towns on the north coast. Nine-tenths of the island is covered with hills or low mountains, but there are rich plains near the low coasts; the only very good harbors are San Juan in the north and Playa in the south.

The people.—Descendants of early Spanish settlers of the better class, called Creoles, live in the towns and carry

on the island trade. The white peasantry (Gibaros) forming most of the population, live mainly on small farms or garden patches in the rural districts. The negro population is small.

Vegetable products.—Only a little over one-fifth of the island is under cultivation. The methods of tillage are

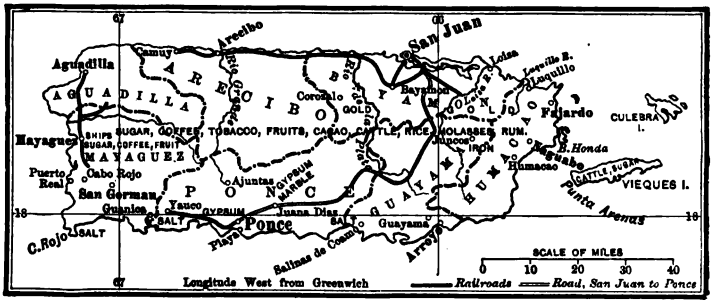


FIG. 87.—PORTO RICO.

San Juan is the capital and largest city. Ponce, the second city, is a busy trading and shipping point. Playa, accommodating vessels of 25 feet draught, is the port of Ponce, and the best seaport, but San Juan has the larger commercial movement. It is difficult for ships to enter the narrow harbor of San Juan when a norther blows. Mayaguez, the third city, is second only to San Juan in coffee exports, and receives a third of the flour sent to the island. Aguadilla prepares coffee for export and makes rum from molasses. Arecibo is merely an open roadstead, but the Rio Grande makes it a center for receiving and distributing commodities. Fajardo and Arroyo export raw sugar and molasses. Industries, confined mainly to these ports and the inland towns of San German and Naguabo, include the preparation of sugar and coffee for market, and the manufacture of tobacco, chocolate (at Mayaguez), soap, matches, brooms, rum, straw hats, and petroleum refining (at San Juan).

rude and primitive. Many farmers use a large sword-like knife, called a machete, to cut down cane and weeds, and even to dig in the soil. The largest crop long was coffee, but it is now far surpassed by the sugar crop. As a rule coffee, all over the world, is grown on the uplands. This is true in Porto Rico, where the best coffee is all produced from 700 to 2,500 feet above the sea. The coffee planters are very careful of their shrubs, shading them from the heat of the tropical sun, and producing a berry which is

famous for its exquisite flavor. Sugar-cane, the next most important crop, is grown on the lowlands, and occupies about one-fifth of the tilled lands. The best tobacco is produced in the mountain regions of the interior. A great variety of fruits and vegetables is grown in the small crops. The forest areas, mostly confined to the mountains, are small, and considerable lumber for buildings is imported.

FIG. 88.—Making hats in Porto Rico.

There are many cattle, but the animal industries are not important. Figure 87 shows the location of the mineral commodities, which are as yet little developed. All the salt is supplied by evaporating brine, and gypsum is used for stucco and fertilizers.

A fine wagon road extends from San Juan to Ponce, but most transportation is by pack animals along poor paths. Our Government is building new roads, and it is expected, some day, to extend the existing railroads entirely around the coasts.

With coffee, sugar, tobacco, and fruit as its leading products, should you not suppose that the densely peopled is-

land needs to import a great deal of food? This is the case. Food makes up nearly half the imports. The island expends millions of dollars a year for our breadstuffs, provisions, rice, and cured fish, besides buying food from the other West Indies, Canada, and Spain.

As manufactures are small, cotton goods, shoes, and iron and steel products are imported from the United States, England, and Germany. Porto Rico pays for all these purchases, amounting sometimes to $25,000,000 a year, with sugar, coffee, tobacco, honey, and a few other exports. It is to the advantage of the island that it has free trade with the United States—the mother country; as the roads are improved, and resources developed, commerce will rapidly grow between our country and its colony. Straw hats somewhat resembling Panama hats is a large house-industry. Many of them are now sent to the United States (Fig. 88).

Territory of Hawaii.—Eight of the eleven volcanic islands of the Hawaiian group are inhabited (Fig. 89). Though their land surface is less than twice as large as Porto Rico, their area is about as great as that of all the other Polynesian islands, and their trade is much larger. The geographical position of Hawaii is of great importance, for it stands as the cross-roads of commerce in the central Pacific, where many steamers in the American, Asian, and Australian trade regularly stop on their voyages. Honolulu was once the headquarters for Pacific whalers, and is now a coaling station for all nations (Fig. 90).

The northeast trade-winds, blowing for ten months a year, make the climate ten degrees cooler than in any other land in the same latitude. Much more rain falls on the northern than on the southern side of the mountains, but most of the tilled lands usually have enough rain for the crops.

The people.—The inhabitants (192,000 in 1910) live mostly along the coasts; the native Hawaiians—a fourth of the population—are declining in number; three-sevenths are Chinese and Japanese laborers; the remainder are

15,000 Portuguese artisans and laborers, and 8,000 Americans, British and Germans. Planting, commercial and financial interests are mainly in the hands of settlers from the United States and their descendants.

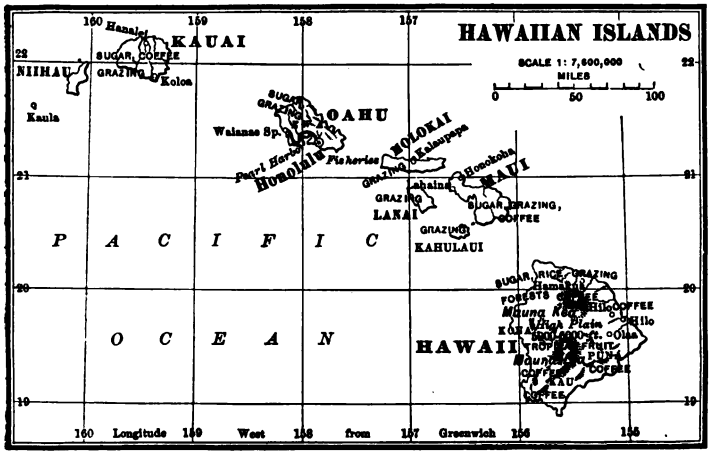


FIG. 89.—Honolulu is an important way station between Australia and Asia on one side and America on the other, being connected by regular steamship lines with the three continents (Fig. 1). Steamers and sailing vessels ply between Honolulu and other island ports, carrying merchandise to the islands and bringing their sugar and other export products to the capital for shipment. Hilo, on Hawaii, is the second port in importance. All the islands have one or more little ports, but until 1902 none except Honolulu had direct steam communications with America or foreign lands. Kalaupapa and Kalawao, near it, are the leper settlements on Molokai.

Products.—The islands are wholly dependent upon agriculture. Raw cane-sugar is the staple product. Much of the low, rich lands between the mountains and the sea is divided among the sugar estates, each having its own machinery for converting the juice into raw sugar. Sugar-cane has just been introduced into Molokai and Lanai, making six islands which now grow this crop. About 600,000 tons of raw sugar are produced every year; only Cuba and Java surpass these islands in the production of cane-sugar (Fig. 29). Both rich and poor buy stock in the

sugar plantations, all of which are owned by stock companies. As in all lands that depend almost wholly upon one industry, the comfort of the people is affected by any change in sugar production or prices. Every one is poorer if the price of sugar falls.

The lowest flat lands, close to the sea, have been turned by the Chinese into rice-fields—the second largest crop—most of the grain being consumed at home, though an important amount is annually exported. The coffee industry, although still very young, produces a fine quality of berry that supplies the home need, with a small surplus for export. The chief fruits are the banana and pineapple—both exported to the United States and Canada. Cattle raising has thus far supplied the meat and milk consumed, but butter is imported.

FIG. 90.—Harbor of Honolulu.

Commerce.—Raw sugar, sent to California refineries to the amount of over $35,000,000 a year, is nineteen-twentieths of the exports. The value of the imports is usually

about half that of the exports. As the islands have practically no industries not related to agriculture, they buy large quantities of cloths, hardware, machinery, and other manufactures. As the forests have been destroyed without replanting, all lumber is now imported from the United States. Australia supplies the lack of coal.

Long before the islands became a part of our country, they were closely bound to us by business relations. Trade is free between our ports and the Territory. We have not only nearly all of the export, but also three-fourths of the import trade, Great Britain, our nearest competitor, supplying about one-tenth of the manufactured goods.

Guam.—This island (390 square miles), the largest in the Ladrone group, has 12,500 inhabitants, of whom over 6,000 live in the city of Agana. The only good harbor is San Luis d'Apra. Rice, the largest product, fish, and cocoanuts are the staple articles of food; copra is the only export. It was ceded to the United States in 1898.

Tutuila.—This island and the islets of the Manua group are our possessions in Samoa. Tutuila (54 square miles, 7,250 inhabitants) has in Pago-Pago Bay one of the finest harbors in the Pacific. We have made it a coaling station. Copra is the largest export.

The Philippines.—These islands, the largest group in the Malay Archipelago, have a land surface about equal to that of the New England States, New York, and New Jersey (Fig. 91). If their northern edge were placed on New York city, their southern edge would touch Cuba. Volcanic mountain-ranges run throughout the islands from north to south. The narrow valleys between the mountains, and the broad, well-watered plains along the coasts, or between the ranges where they spread apart, are the regions where crops are raised and most of the people live. The climate is tropical.

The people.—The inhabitants (8,000,000) are mostly Malayan, but are divided into many tribes, some of whom are not friendly to one another. The Moros of the south, for

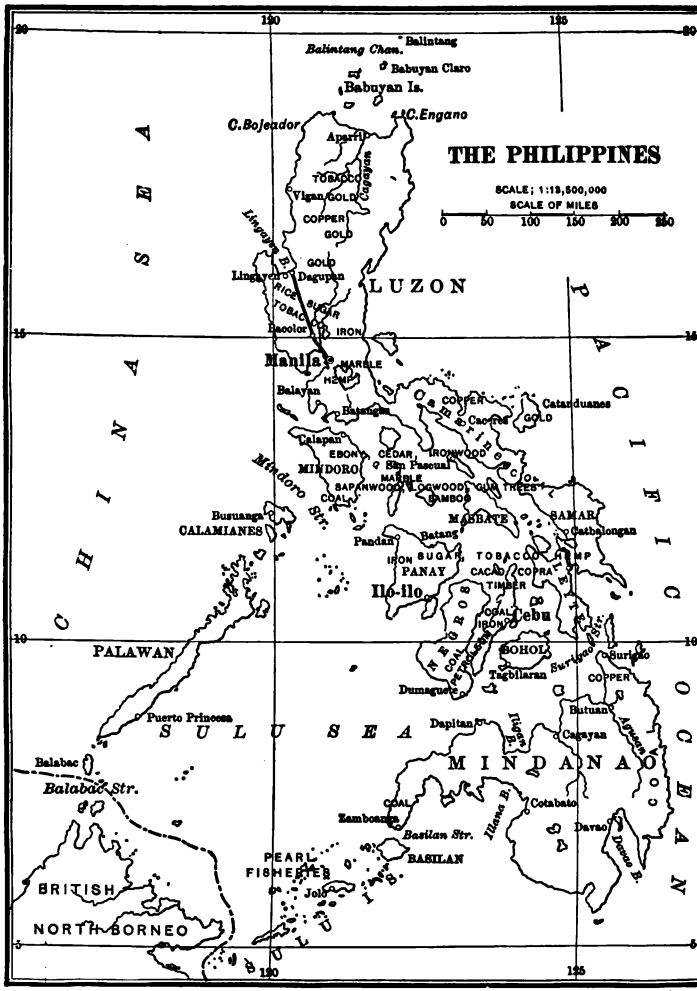


FIG. 91.

example, have never been on good terms with the Visayas of the center or the fighting Tagals of the north. One of the problems before our Government is to maintain peace

among the tribes so that they may all share the blessings of civilization. The people living north of the tenth parallel (Fig. 91) are most advanced, and foreign trade is mainly confined to their part of the archipelago. About

FIG. 92.—Fishing boats in the Philippines.

50,000 Chinese are laborers and traders in the seaports and towns; the small white population includes many Americans and Spaniards.

Vegetable products.—Not more than a third of the surface is adapted for tillage, but the present production may be increased tenfold. Large quantities of Manila hemp (page 94) are grown from Luzon to Negros and sent to many little harbors, called hemp ports, for shipment to Manila, Ilo-ilo, or Cebu, where the crop is loaded on foreign steamships. The best tobacco, of fine quality, is raised in north Luzon and shipped to Manila to be turned into millions of cigars and cheroots, which, the Orient believes, are as fine as the famous "Havanas." They are now well known in this country. Raw sugar and copra are the other large articles of export. A great deal of rice is

grown, but often not enough to feed the people, who depend upon Cochin China and other Asian rice-fields to augment their supply.

The vast forests, containing the finest of building and cabinet timbers, and the gold, iron, and other mineral resources, are as yet little utilized. Fishing along the coasts supplies an enormous amount of food (Fig. 92).

Seaports.—Three large ports collect and distribute the commerce of the islands, for which purpose many small steamers place them in regular connection with numerous smaller ports. Manila, on one of the finest bays in Asia, absorbs most of the foreign trade, but Ilo-ilo and Cebu are also important. Manila has direct steamship connections with San Francisco, Hongkong, Singapore, Yokohama, Australia, and Liverpool. The chief ports are connected by cable with San Francisco and Hongkong, and thus with the world's cable system. Our Government has built many hundreds of miles of telegraph-lines through the islands.

Commerce.—The islands sell much more than they buy, about two-thirds of the foreign trade being exports. Manila hemp is the largest item, most of it going to the United States and Great Britain. China and Japan take most of the sugar, which is inferior, owing to poor methods of production; it brings a low price. Many millions of cigars are sold in Asia and Europe, and increasing quantities in this country; but Asia buys comparatively little leaf tobacco, which is a large export to Spain and Great Britain. Most of the copra goes to Marseilles for soap-making.

The islands having no manufactures except cigar-making, distilling, cotton spinning, and a few other industries at Manila, there are large imports of iron and steel goods, cotton cloth, glass, crockery, and other articles.

The natives are closely related by race and character to the Javanese, who, under Dutch rule, have made their island one vast garden. Good government and education may be expected to produce similar results in the Philippines.

CHAPTER XV

CANADA AND NEWFOUNDLAND

Divisions of Canada.—The Dominion of Canada, the most important colony of Great Britain, is almost as large as our country, including Alaska, but its population is less than twice that of New York city. It has room and work for many more millions of people. Canada may be divided into four great regions (Fig. 93):

The Forest Region of the southeast, extending from the Atlantic 2,300 miles westward, once heavily timbered, but millions of acres in Ontario and Quebec have been cleared of trees and turned into fine farms; here are most of the live stock, the dairy, fruit, and lumber industries, and large fisheries along the coast.

Second, the region of Plains and Prairies, extending from Manitoba 1,000 miles to the mountains, where most of the wheat is grown; in its drier western part water is being led from mountain streams over the thirsty plain, turning parts of it into fertile farm lands.

Third, the Mountain Region, 600 miles wide, extending to the Pacific, a large source of coal, gold and other metals, with splendid timber on the mountainsides and rich agriculture in some of the valleys.

The fourth division, much the largest, is the cold Barren Lands and frozen arctic areas of the north, peopled by a few Indians and Eskimos, of little value except for the minerals that will, some day, be mined. Fig. 93 shows only the southern regions where the richest resources abound and

where live most of the white men, chiefly of British descent, though there are many French Canadians and some of German and other nationalities.

Climate.—The winters of these southern regions are long and cold, the snow is deep; but the summers are long and warm enough to mature crops, even a little maize being raised in the east; so Canada is a great farming country.

Agriculture.—Seven-tenths of the people are farmers, producing a great deal more food than they can consume, so that they have much to export. The largest food ex-

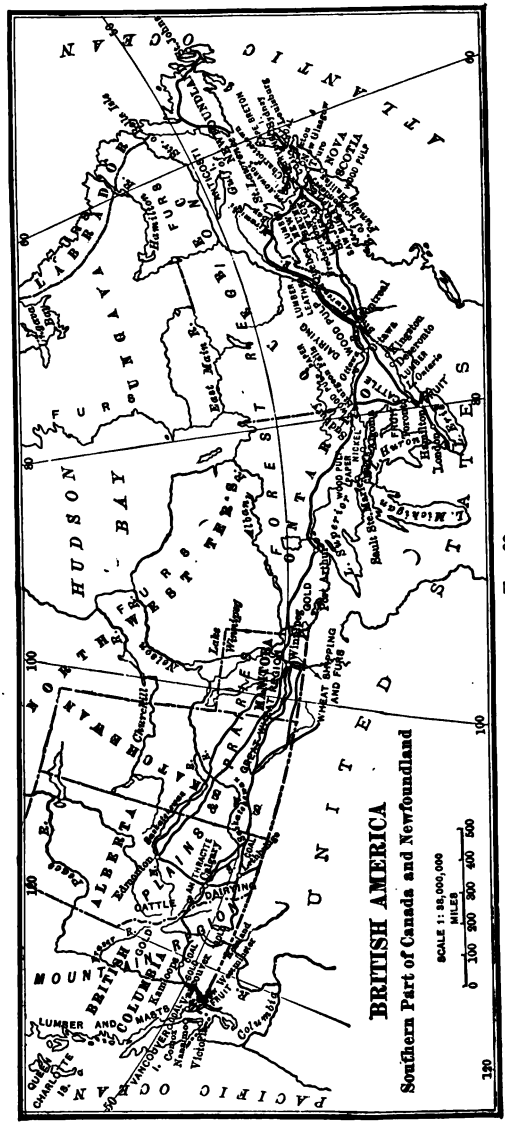


Fig. 93.

ports are wheat and wheat flour. The Western prairies, with their black, loamy soil, are now the great center of wheat raising, the grain being sent by rail or the Great Lakes to Montreal, where British steamships load with the export grain. Manitoba, Saskatchewan, and Alberta, where buffaloes grazed some fifty years ago, produced 70,000,000 bushels of wheat in 1907. Ontario and Quebec also raise large quantities. Oats is a very large export crop from the eastern provinces. Because oats, barley, and rye are hardier than wheat, they thrive north of the wheat belt on the prairie lands as well as in the eastern provinces.

The orchards of Nova Scotia and the southeastern counties of Ontario are famous. More than a third of the apples sent to Great Britain come from these fine orchards. Ontario also raises many other choice fruits, including grapes for wine and table use.

Animal industries.—The farmers of Ontario and Quebec give great attention to grazing and dairy products. They ship many thousands of live cattle and sheep to the meat markets of England, besides a great deal of fresh and canned meats and poultry. As Canada raises little maize, many of her hogs are fattened on peas, the exports of bacon being far larger than all the other meat exports together. Half the milch cows in the country are in Ontario; eastern Canada exporting from its hundreds of factories far more cheese than any other country in the world, sells nearly all of it to Great Britain. Prime butter is also a large export, as cold storage has rendered these shipments possible. Butter is kept in cold storage from the creamery in Canada to the consumer in England. The annual export of domestic animals and their products has often been worth three times as much as the exports of grain.

The fisheries.—Nearly 90,000 men are now engaged in the Canadian fisheries, and the number is increasing almost every year. The most valuable fisheries are in the shallow

waters of the coasts and the cold and foggy banks of the Atlantic shores, where cod, halibut, herring, and many other kinds of sea food abound (Fig. 94). The lobster fisheries are the most productive in the world (Fig. 95). New Brunswick sends millions of herring to our Maine factories to be canned as sardines. The Pacific coast contributes salmon caught in many rivers, and canned most extensively on the Fraser River. The whitefish, trout, and stur-

FIG. 94.—Net-fishing off the coast.

geon of the Great Lakes are also important. Salmon, cod, lobsters, and herring form about one-half of the value of the fisheries, which are worth over $25,000,000 a year. Half of the catch is exported, the larger part of it to Great Britain and the United States. Large quantities of cured cod go to Roman Catholic countries, most of all to the West Indies.

Furs.—Canada, mainly north of the settled regions, is one of the largest sources of furs and skins. The Hudson Bay Company sends its hunters and trappers through the forests and waste lands, who return with otter, beaver, bear,

fox, and many other kinds of furs and skins, most of which are sent to England and the United States.

FIG. 95.—A LOBSTER TRAP.

Lobsters are caught in traps made of lath with funnel-shaped openings at the ends. The traps are baited with refuse fish. As many as 500,000 traps have been used along the Atlantic coast in a single year.

Forest industries.—Canada has a larger extent of forests than any other lumber-making country. Pines, hardwoods, and spruce make Ontario, Quebec, and New Brunswick the largest sources of lumber and wood-pulp. Hundreds of sawmills near Ottawa, Deseronto on Lake Ontario, and Quebec, make these cities the greatest centers of the lumber trade. Hemlock forests and many cattle in the southeast have made leather tanning a great industry at Quebec and Frederickton, N. B. The forests of British Columbia also supply much lumber and timber—mostly the tough, strong Douglas fir, well suited for masts and buildings. More northern forests are still untouched, the spruces in particular being of vast extent and one of the future sources of pulp-wood for paper-making. Lumber, timber, and pulp-wood are among the large exports; the United States and Great Britain take nearly all of them.

Mineral industries.—The yield of gold quadrupled after the discovery of the Yukon field in 1897, but declined later. There are many other gold-mining regions in British Columbia, western Ontario, and Nova Scotia. About half the world's supply of nickel comes from the Sudbury district, Ontario, the United States usually buying all of it. Silver, copper, and other metals abound, but after gold, coal is the largest mineral product. Most of it comes from Nova Scotia, Alberta, Cape Breton Island, and the mountains of the Pacific slope. Excellent steaming coal for ships is mined on both coasts. The Government pays a bounty of $3 a ton on all pig iron made at home from Canadian ore, and this is stimulating both iron-mining and iron and steel manufactures on the Atlantic coast. About half of all we buy from Canada is metals and coal, our country taking nearly all that Canada has to sell.

Manufactures.—Manufactures have made much progress, though the population is too small as yet for the highest industrial development. Only the coarser kinds of cotton and woolen textiles are made; clothing, furniture, agricultural implements, lumber, leather, and wood-pulp are leading products; all but the first are also important exports. England takes nearly all the leather, and we share largely in the wood-pulp.

Communications.—The lakes, 73 miles of canals, and the St. Lawrence River make a continuous inland waterway from Lake Superior to the Gulf of St. Lawrence. Considerable of our own merchandise, including maize (16,000,000 bushels in 1899), wheat, flour, and manufactures take this route to Europe. Many railroads connect Canada with the United States. The Canadian Pacific Railroad, across the continent, is the most direct route, among American transcontinental lines, for the trade of Europe with the Orient.

Seaports.—Montreal, the largest seaport and center of commerce, is connected by regular steamship-lines with England, Scotland, and Ireland. All the Gulf of St. Law-

rence ports being closed by ice in winter, Montreal's winter trade is done through Halifax, N. S., and Portland, Me. The ports of Vancouver and Victoria are outlets for the Pacific trade.

Toronto, Kingston, and Hamilton are among the important lake ports and manufacturing centers.

Commerce.—The trade with other countries, advancing by millions of dollars a year in the recent period of prosperity, reached, in 1915, the sum of $409,000,000 exports and $445,000,000 imports. Great Britain and the United States buy three-fourths of all Canada has to sell, Great Britain buying a far larger amount than we do, because she needs the foodstuffs that Canada produces, while we do not. Great Britain buys most of the products of the farms and grass lands, besides a great deal of the products of the fisheries. Our purchases are mainly metals, lumber, wood-pulp, fish, and live animals.

We sell to Canada three-fifths of everything she buys. The reason is that, being poor in manufactures, Canada must buy them from other lands, and as our manufactures are good and cheap, she buys more from us than from Great Britain, though British goods pay a far lower tariff than our articles. Canada is a high-tariff country, but since July, 1900, the tariff on goods coming from most of the British Empire has been one-third lower than on articles from other countries. France, Germany, and the West Indies are also prominent in Canada's trade.

Newfoundland.—This large island is a British colony distinct from Canada. Its main support is catching and curing fish and killing the oil-seal for its oil and skin. Dried cod, sent mostly to the West Indies and the southern countries of America and Europe, is half the exports. Food and clothing, the main imports, come from the United States, Great Britain, and Canada. St. John's, the capital, is wholly given to the fishing trade. The annual exports are over $10,000,000; imports about the same.

CHAPTER XVI

GREAT BRITAIN AND IRELAND

Situation and climate.—The United Kingdom (Great Britain and Ireland) is situated near the center of the northern or land hemisphere, close to the densely peopled countries of continental Europe, which are the largest markets for its manufactures, and within easy reach of the United States and Canada, which are the largest sources of its food supplies. The position of the kingdom is therefore extremely favorable for commerce. Though it lies far north, the persistent westerly winds blowing over a warm sea (Fig. 7) give it a temperate climate with abundant rain. The kingdom has only about 44,000,000 inhabitants, but, being the largest colonial power in the world, nearly one-fourth of the earth's inhabitants live under the British flag; this fact has helped to make the kingdom the leading commercial nation (page 36).

Ports.—The deep bays and wide estuaries of the rivers are advantageous for commerce. England alone has about 100 ports, including those on the rivers. No manufacturing center is more than 50 miles from a seaport (Fig. 96). The east-coast harbors of Great Britain (England and Scotland) are most favorably situated for trade with the neighboring continent, those of the west coast for trade with America and the other continents.

London, with 6,000,000 inhabitants (Greater London), is the leading port of the world and the center of enormous business interests extending to every part of the globe. Fig. 97 is an example of its great docks, where more ship-

FIG. 96.—The railroad system radiates from London in all directions to other ports or industrial centers; these in turn are centers of smaller systems of radiating lines; so that the country is covered with a network of railroads, all large towns being connected with all the others by one or more lines.

ping is always moored than at any other port of the world. The Thames is navigable at high tide for the largest vessels to London. The price of tea and hides throughout the world is fixed by the London markets. Liverpool,

on the estuary of the Mersey, with miles of docks and great coal and manufacturing districts at its door, is the second largest port of the kingdom, and fixes the world's price for export cotton and cereals. About three-fifths of the total exports and imports pass through these two cities. As the new ship-canal at Manchester has made it a seaport, it now shares the cotton trade with Liverpool. Glasgow, Hull, Plymouth, and Southampton are also important in international trade. Cardiff and Newcastle are coal-shipping ports, Cardiff shipping more coal than any other port in the world. Observe in Fig. 96 the position of ports that are devoted to general trade, coal, or the fisheries, the railroads, and the distance by sea to neighboring foreign ports.

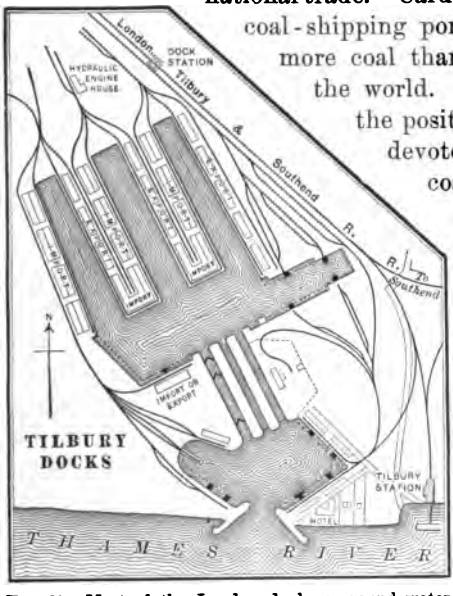


FIG. 97.—Most of the London docks surround water basins connected by channels with the Thames. Incoming vessels are moored at the import docks on which their cargoes are unloaded; they then receive cargoes from the export docks on the other side of them. Trains and trucks move down the middle of the docks, unloading export freight on one side of the tracks and loading with imports on the other.

Distribution of industries. — The rough, hilly regions of the west of England and the southwest of Scotland, near the sea, produce most of the manufactures except those that are made in the great woolen manufacturing district of Leeds, and the iron and steel manufacturing centers around Birmingham and Sheffield. The more level lands of the east and south of England,

and the rich lowlands of south Scotland, are covered with pastures and fields of wheat, barley, oats, and root crops. Many industries around the coasts pertain to the shipping trade, such as rope- and sail-making. The sterile Scottish Highlands are least productive, though many sheep graze in the valleys. Within the highlands along the coasts of Ireland is a rich central plain devoted to agriculture and grazing. Ireland's manufactures and ports are mainly on the east coast, where supplies of coal may easily be obtained from England.

Agriculture.—The farms are kept in the highest state of productiveness by drainage, fertilizers, and machinery; but though more is raised to the acre in England than in any other country, agriculture is of subordinate importance (Fig. 98). Two-thirds of the people live in towns; there are more merchants than farmers; there are five times as many workers in mines, factories, and shops, as tillers of the soil; thus the kingdom is far greater in manufactures and commerce than in agriculture. Though very large crops of wheat, oats, barley, and potatoes are raised, and rain and soil combine to make the most luxuriant of pasture lands, the farms and live stock do not begin to supply sufficient food for the people. The insufficiency of the home supplies is intensified by the fact that many thousands of ships as well as millions of dwellers in the cities and towns must be provisioned.

The result is that the kingdom is the greatest buyer of foreign food supplies. Wheat and flour are by far the largest of all the imports, most of these supplies coming from the United States, Russia, India, and Canada; Argentina and Australia are also large shippers of wheat. The entire supply of maize for animal fattening is imported from our corn belt. Even vegetables are brought from Belgium, France, and the far-away Canary Islands.

As there is almost no timber for lumber, the imports come next to food, cotton, and wool in value. Lumber

comes mainly from Scandinavia, Russia, Canada, and the United States.

FIG. 98.—The drier and lower lands of the east and southeast of England are the chief wheat-growing area. Most of the barley is grown in this wheat region. Oats flourish better in the cool, moist regions of the west and north. Pastures and root crops for stock-raising cover large areas. Hops for beer-making are grown mainly in the south of England. Compare Fig. 98 with Fig. 99 to trace the relations between the distribution of the manufacturing industries and of the coal-fields.

Domestic animals.—British horses, cattle, swine, and sheep are unsurpassed in quality. The stall-fed cattle make prime beef, the butter and cheese are of great excellence, and English mutton is famous, but the supply fills only a part of the demand. All parts of the world are under contribution for meat, including poultry and dairy products, for which about $200,000,000 a year is expended. Many millions of dollars' worth of frozen beef and mutton are brought across the tropics from Australia, New Zealand, Argentina, and Uruguay. Millions of frozen rabbits come from Australia and New Zealand, and immense quantities of poultry from France, Belgium, Russia, and other countries. Bacon, the largest item, is one-fourth of the meat imports. Our country has far the largest share in the meat supplies. The kingdom buys nearly 2,000,000,000 eggs a year, most of them coming from Russia. One of the most profitable industries of Denmark is making butter for Great Britain, which buys from that little country far more than half of its immense foreign supplies.

British wool is famous for quality and the variety of fabrics for which it is adapted. The home supplies are augmented by enormous imports, not only from Australasia—its chief source of foreign wool—but also from nearly every wool-growing land in the world. Flax and wool are the only fibers produced in the country. All others are imported, including about two-fifths of the world's supply of raw cotton, most of which comes from our country.

The fisheries.—Fish is the only food product yielded by the country in adequate supply. More than 107,000 men are engaged in the industry all around the coasts. Cod are caught on the Dogger Banks (Fig. 98); the map shows the distribution of fishing and the fish that are most important. Many of the fishing craft have tanks, in which the fish are kept alive till they are transferred at the ports to the trains that carry them to the cities. Herring is the

great fish of export, being pickled and sent in large quantities to the Greek and Roman Catholic countries.

Mineral products.—The kingdom is richer in mineral development than any other land in the world except the United States. These products, mainly coal and iron, make up for its deficiencies in agriculture and animal raising.

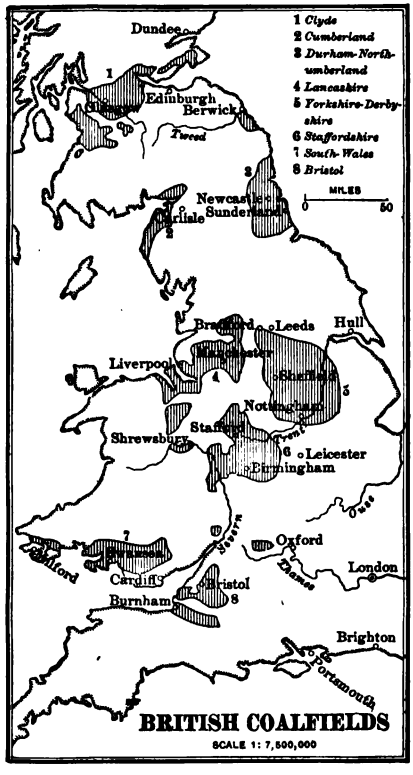


FIG. 99.—The Clyde coal-field (1) is the center of the largest ship-building in the world, of locomotives, machinery, and all kinds of iron-work, and of textile manufactures. Coal is exported to St. Petersburg, the Mediterranean, and the factories of Belfast and north Ireland; (2) much of the coal is used to smelt iron ore in Furness and to supply north Ireland; (3) large quantities are shipped to London and to many parts of the world, and also used in the great iron industries of Newcastle, Sunderland, and other cities; (4) very little exported, as nearly all is consumed in the textile, machinery, and chemical works of south Lancashire, or sold to steamers sailing from Liverpool and Manchester; (5) supplies the woolen district of Leeds and Bradford, the iron-works of Sheffield, the lace, underwear, and hosiery factories of Nottingham, and the surplus is sent to London; (6) supplies fuel for the great center of iron manufactures in the Birmingham region, steam-power for the pottery district, and sends much coal to London; (7) smelts many ores, including some that are imported, as copper from Chile, and red hematite (steel-making ore) from Spain; also exports coal through Cardiff to all parts of the world; (8) supplies the west of England woolen-manufacturing centers.

Coal.—Coal is the basis of the vast manufactures and commerce of the country, which produces far more coal than any other land except the United States. As its mines are near the sea it can export more easily than most other lands, and it supplies nearly all of the coal-buying countries. Each coal-field has special lines of manufactures closely associated with it (Fig. 99).

Iron.—Iron ore production has fallen off till the kingdom is surpassed by Germany and is third on the list (Fig. 67). Observe that many of the iron-mines (Fig. 98) are near or in the midst of coal-fields, with limestone also close at hand, so that iron and steel are cheaply produced. Large quantities of ore from Spain and smaller supplies from Sweden and Algeria are imported, both because the home supplies are diminishing and also because the foreign ores are better adapted for some qualities of steel.

Though the tin-mines of Cornwall and Devon (Fig. 98) are the largest European sources of this metal, England imports more from the Malay peninsula than she produces. Large quantities of all the other metals are imported. The country produces more salt than any other except the United States.

Manufactures.—As factories depend largely upon coal, we see the manufacturing industries of the kingdom chiefly grouped near or on the coal-fields of central and north England and in the Clyde region of Scotland; there is little activity in Ireland, which must import coal, except at Belfast and a few other places on the east coast.

Textiles.—Cotton-spinning and weaving are the largest industries, about 5,000,000 persons depending upon them for a living. Textile fabrics are more than one-half the total exports. The most important centers of the cotton industries are in Lancashire, England (Fig. 100), and Glasgow and Paisley, Scotland. The moist climate of the country being most favorable for cotton-spinning, England still leads the world in the quality of her best yarns and

finest fabrics; the United States and Germany, however, now compete with her on even terms in many cotton cloth markets. British cotton cloth and yarn are sent to all

FIG. 100.—COTTON AND WOOLEN DISTRICTS.

Manchester is the great cotton market and distributing center, but manufactures very little. Spinning cotton yarn engages many thousands of operatives in Oldham, Blackburn, Bolton, Preston, Burnley, Rochdale, and Stockport. The largest weaving centers are Preston and Burnley. Leeds and Bradford are the main centers of the woolen trade, and with the large towns near them make most of the woolen fabrics. Leeds and Huddersfield produce broadcloth; Halifax, flannel, rugs, and carpets; Bradford, alpaca, mohair, and woolen damasks. Leeds and Barnsley are large producers of linen, drawing their fiber from the flax-fields of Yorkshire and Russia. Coventry, Macclesfield, and other towns south of the cotton and woolen districts are the most important centers of silk-weaving. Liverpool and Manchester, with its ship canal, are the ports of the cotton and woolen districts.

parts of the world, chiefly the warmer countries, the exports being larger than the entire woolen, iron, and steel exports.

England probably stands at the head of the woolen manufacturing countries. Two-thirds of the product is consumed at home, but large quantities of fine English woolen and worsted goods, flannels, and blankets are sent to all the cooler countries. The linen, jute, and silk industries also are important.

Metal Industries.—Metal-working, after textiles, is the most important class of industries. There are iron and steel industries in most parts of the country, but the great center of all the working in metals for centuries past has been the midlands at Birmingham and far around it,

where everything is made, from steel rails to a jack-knife. Machinery is made in more than 2,000 shops. Sheffield is famous for its cutlery; the kingdom, in fact, is conspicuous for the quality, excellence, and cheapness of its metal manufactures, which include everything, from needles and knives to the mightiest steam-engines and anchors that weigh tons; but for some years the kingdom has suffered from American and German competition, not a few of our iron and steel products even selling in Birmingham, Sheffield, and other famous centers of such wares.

In proportion to the iron produced or imported by Great Britain and Germany, the former uses more iron and the latter more steel. In our country more steel is used for the frames of buildings, bridges, freight cars, and some other purposes than in Europe; the result is that our production of steel is enormously larger than that of Germany and England together. But no other country builds so many steel ships, or any other kind, as are turned out at the great yards of Belfast, the Clyde and other rivers, many of them built for foreign countries.

The chemical industries produce enormous quantities of aniline dyes, sulphuric acid, glass, soap, and other articles. About 500,000 people are employed in making leather and its products. Nearly every industrial art is largely represented in Great Britain, which, until within the past few years, was the mightiest of workshops, unrivaled in the quantity and quality of its products. To-day it is meeting competition.

Commerce.—Great Britain, giving most attention to making things for the world to use, still sells more goods to other lands than any other nation, though it is now closely pressed by the United States. Having far more ships than any other nation, it carries its own commodities, and also a great deal of freight for other countries. About one-fourth of all it sells comes to the United States, one-fourth goes to the European continent, one-fourth to its

colonies, and one-fourth to the rest of the world. Because most of the things it buys are the necessities of life (food) or the necessities of industries (raw materials), it is a free-trade country, collecting duties on only a few products. The trading relations between Great Britain and the United States, both buying and selling, are much larger than their dealings with any other countries. The kingdom thus contributes far more to our prosperity than any other nation.

The business interests of the kingdom may be summed up in the statement that Great Britain draws very largely upon the food products and raw materials of the whole world, and pays for them with her manufactures. The great value of her industries in the home markets, and the vast profits of her thousands of ships that carry freight for other nations, make up for the excess of imports over exports.

CHAPTER XVII

GERMANY *

Position.—Germany is the most central country of Europe. On the east and southeast are Russia and Austria-Hungary, great producers of grain, flax, hemp, and timber, which Germany needs. These countries in turn need Germany's manufactures. On the west and southwest are Belgium, France, and Switzerland, famous for their highly developed manufactures. Both France and Switzerland need coal, coke, iron, and machinery, which Germany long sold to them in great supply. The empire was thus surrounded by good markets. On the north is the Baltic sea, giving Germany access by water to ports of Russia and Scandinavia, with which countries it had a large trade; on the northwest is the North Sea, through which German steamers passed on their way to all parts of the world. Germany was most favorably situated both for Continental and international trade (Fig. 101).

Physical features.—The empire slopes to the north. Most of the southern half is hilly and even mountainous. Here the soil is fertile, raising large crops, particularly in the valleys. Many mountains are clothed with forests, which make the center and southwest of the country the chief seat of the lumber industry; here, too, are made the wooden toys, of which we all know. In this region, also, are some of the large coal-fields, which have developed manufactures in parts of south Germany.

Most of the northern half is a plain, which is not naturally fertile. Prussia has been made highly productive

* Maps of regions whose boundaries are changed by the Peace Conference will be revised when exact data are supplied.

only by the most careful and scientific agriculture. From the mountains of the south a number of very important

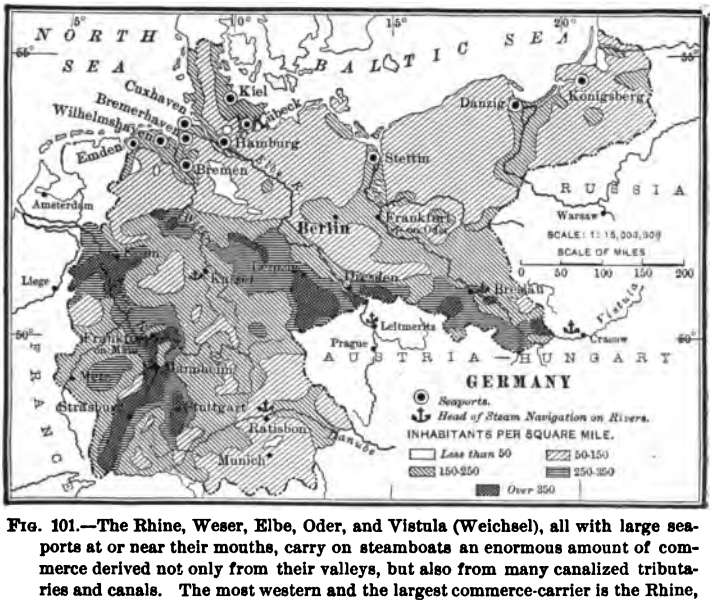


Fig. 101.—The Rhine, Weser, Elbe, Oder, and Vistula (Weichsel), all with large seaports at or near their mouths, carry on steamboats an enormous amount of commerce derived not only from their valleys, but also from many canalized tributaries and canals. The most western and the largest commerce-carrier is the Rhine, which neither begins nor ends in Germany. Observe that the parts of these rivers navigable for large boats extend entirely across the empire or far into it. The North Sea ports are open all the year round, but the Baltic ports are frozen over in winter; Lübeck and Stettin, however, are kept open by ice-breakers. Cuxhaven is the outport of Hamburg and Bremerhaven of Bremen. Kiel and Wilhelmshaven are naval ports. The population is most dense on the coal and iron fields, where industries are most active, and in the fertile Rhine valley, which is crowded with manufacturing towns. It is least dense in the low-lying agricultural and stock-raising regions of Prussia and in some of the mountain districts.

rivers cross Germany to the sea; of these, the Rhine and the Elbe are the greatest commerce carriers among the rivers of Europe (Fig. 101). All these rivers, with the canals that connect them, give wonderful facilities for cheap transportation (page 28).

Seaports.—Fig. 101 shows the ports that are scattered along the 1,200 miles of coasts. The great city of Hamburg, which handled nearly one-half of the foreign com-

merce of Germany, was surpassed only by London and New York in the magnitude of its sea trade. At high tide the largest vessels ascend the Elbe, 60 miles, to the Hamburg

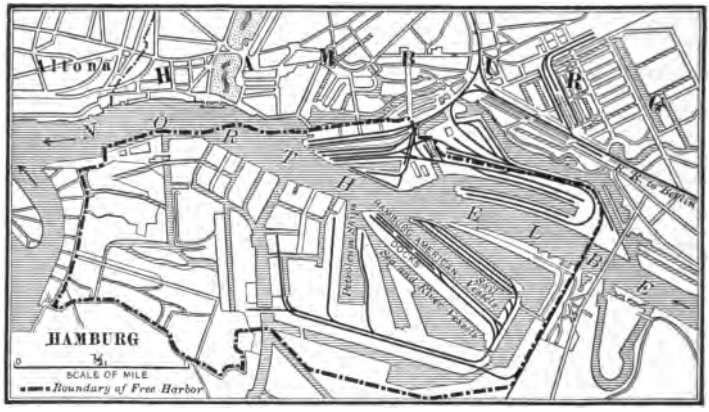


FIG. 102.—THE FREE PORT OF HAMBURG.

Two thousand five hundred acres of land and water in the harbor form the free port. Free ports serve in part the same purpose that our bonded warehouses do. Goods may be sent to bonded warehouses and forwarded later in bond to their destination in a foreign country without paying duties. In the same way goods sent to the free ports of Germany and Denmark do not come under the supervision of the customs laws. But if they are taken from the free port for consumption in the country to which the free port belongs, they must pay duties. The free ports are Hamburg, Bremen, Cuxhaven, and Danzig in Germany, and Copenhagen in Denmark.

docks, and transfer freight to boats that may carry it nearly to Prague in Austria. Bremen is the second largest port, but the shallow Weser permits only small vessels to reach the city, so that Bremen does most of its shipping trade through Bremerhaven. Hamburg and Bremen are Germany's two great world ports. The trade of all the others is mainly with neighboring parts of the Continent. All the larger ports of Germany are known as free ports (Fig. 102). Though Germany has a very large merchant marine, a great deal of her commerce is carried under foreign flags.

Vegetable products.—Germany has become a manufacturing rather than an agricultural nation, so that to-day less than half the people live on the farms. The plowed- and grass-lands, though very carefully utilized, do not raise all the breadstuffs and meat the people require. Rye-fields, scattered all over the sandy plain of Prussia, produce twice as much of that cereal as all the wheat that is grown; rye is needed in great quantities to make the rye bread, which is eaten by the peasantry. Both rye and wheat are imported in enormous quantities, Russia supplying the rye and sharing the wheat imports with the United States and other countries. A large amount of our maize is also imported. The potato is a great food resource, and is used besides in the manufacture of a large amount of alcohol, which the Germans now use for illumination, heating, and steam fuel.

Much more grain and meat might be produced if so much attention were not given to the sugar-beet (Fig. 103). No other farm product supplies so much material for manufacture as beet-root. More than one-half of the sugar extracted from this root is exported, for the Germans are small consumers, using only one-third as much sugar per capita as our people eat. Their sugar exports nearly pay for all the wheat and rye they import, and beet-growing, long encouraged by a government bounty, has been more profitable than most farm crops.

Much lumber has been imported from Scandinavia and the United States, though the resources of the southern forests are large. No one is allowed to destroy a tree without planting another; thus the wood-cutters prepare for another crop of timber as they clear away the present forests.

Beverages.—No other country brews so much beer as Germany, where the consumption is enormous, amounting, in 1901, to 131 quarts a year for every inhabitant. Bavaria,

whose warm, sunny climate produces the best hops, makes about one-third of all the beer. The light wines of the Rhine and its tributary, the Moselle, are celebrated, but exports are small compared with the imports of French wines.

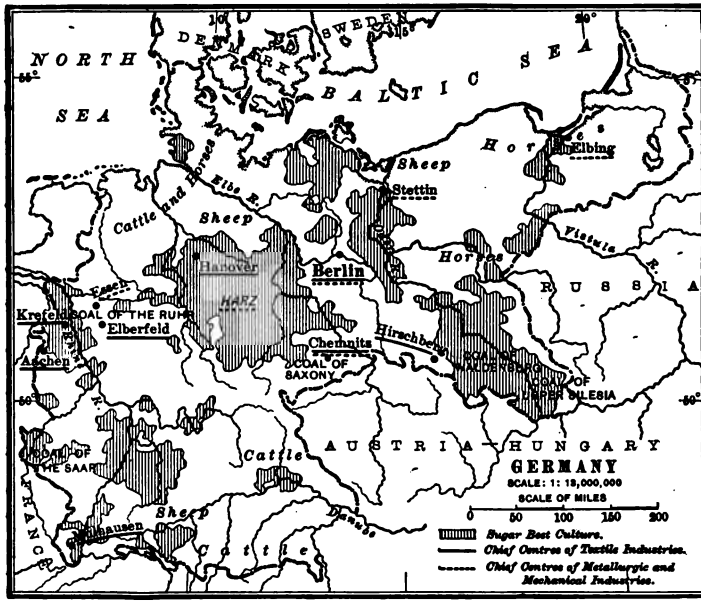


FIG. 103.—The larger part of the beet crop is grown on the plains of Prussia and in the basin of the Rhine. As most sugar is made where most beets are grown, the largest centers of the industry are in the lowlands around the Harz Mountains and in southeast Prussia (Silesia).

The coal-fields are near large navigable rivers, and their product thus has the advantage of cheap water transportation. The coal of the Rhine lies in the valleys of its tributaries, the Ruhr and the Saar. The coal of the Elbe is mined both in the kingdom and the Prussian province of Saxony. The coal of the Oder is found in Silesia. Great quantities of lignite (intermediate between peat and coal) are also mined for use mainly in sugar refineries and distilleries.

Animal industries.—The moist climate and wet soil of the northwest, near the sea, are so favorable for the growth of fine grasses that cattle- and horse-raising is the leading industry in that region. Germany has more cattle than

any other European country except Russia, and is thus able to send a good deal of butter to England. Westphalia hams from grain-fattened hogs, bred so as to make the meat tender and least fat, are famous the world over; many hogs are fattened on acorns and beechnuts; though Germany needs to import a very large amount of hog products, she sells her own bacon and hams in a number of countries. The sheep have decreased by millions, because the decline in the price of wool (page 87) made them less profitable, and their pastures were also needed to raise more food for the growing factory towns; so wool from Argentina, Australasia, and Cape Colony are among the largest imports; the finest wool is grown in the southeast, where the big mills at Chemnitz, Breslau, and other places turn it into excellent fabrics. The great imports of horses, swine, meat, and wool show that the animal industries are far from meeting the needs of the people.

Mineral resources.—Germany's riches in coal and iron have made her the third largest manufacturing country. They are found close together; no other country of Europe, except England, mines so much of either mineral. The richest coal-fields are along the Ruhr River in Prussia, near the Rhine, with extensive iron-ore resources close at hand. Nearly two-thirds of the iron comes from the west, where it is closely associated with the coal-fields of the Saar. The greatest textile and iron industries of the south are situated on the coal-fields of Saxony. The rivers and canals are of the greatest importance in carrying coal and iron far and wide to factory towns scattered through the country; thus the coal, pig iron, and steel of upper Silesia are floated down the Oder to Berlin and many other industrial cities. Steel from the Ruhr coal-fields is landed on the docks at Antwerp at a cost for haulage of 82 cents a ton. Cheap transportation has helped Germany to compete with England in the metal trade, and also to bring in the superior steel-making ores of Spain and Sweden.

Upper Silesia being the world's largest source of zinc, Germany is able to export this metal. Salt is the only other mineral produced in sufficient quantities.

Manufactures.—Factories, dotted all over the country, give Germany her proud position among industrial nations. The home workers are protected by high duties on foreign products; labor is highly skilled, as the workmen are carefully trained. The Germans excel in the chemical researches that are so important in cheapening and improving the processes of manufacture (page 23); they send agents to all parts of the world to find markets for their goods; they have cheap transportation. All these advantages have given them a large share of the world's trade in factory products.

Iron and steel products.—Every variety of iron and steel goods is made, from a nail to the largest steam-engine. The metal industries employ more men and turn out a larger value of product than any other. The greatest iron and steel works are at Essen (Fig. 103), where the Krupp works employ over 40,000 men, and produce cast-steel, steel rails, cannon, and many other articles. The making of cutlery, machinery, and other products has been highly perfected and is carried on everywhere, particularly in Prussia, wherever coal and metal may be cheaply transported; thus Berlin is very important as a manufacturing center, besides being the political and commercial capital of Germany and one of the great money markets of the world. Germany buys no metal goods or machinery from foreign lands unless they are cheaper in price and better in quality than can be produced at home, so the imports of these articles are very much smaller than the exports.

Germany has ranked next to Great Britain in shipbuilding. Its ocean vessels, some of them among the largest and swiftest afloat, visit all parts of the world.

Textile products.—The textile industries are next in importance, with cotton goods as the leading feature. Germany

was our second best customer for raw cotton. Observe in Fig. 103 the location of the greatest textile centers. Elberfeld, with the neighboring city of Barmen, is known as "the German Manchester," and is one of the greatest cotton centers of Europe. Krefeld is famous for its silks.

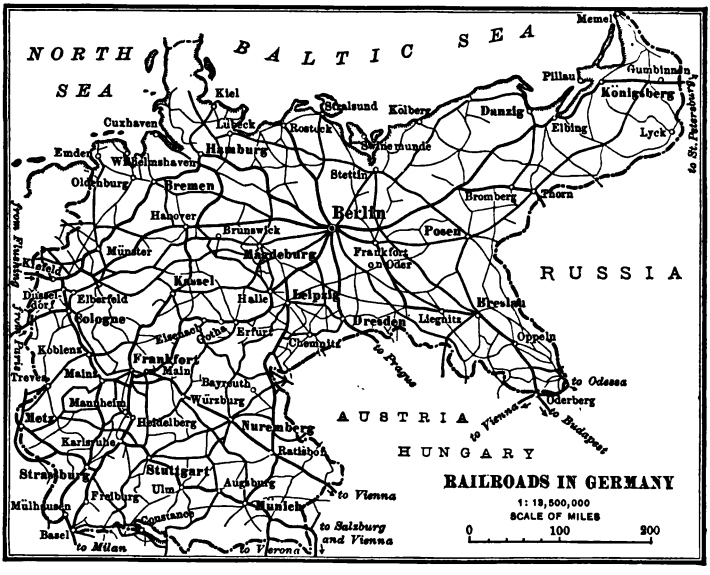


FIG. 104.—Berlin is the center of the fine railroad system, which extends to the most remote parts of the empire. Freight is carried at cheap rates, and thus the railroads have had a large part in industrial development. The three classes of railroads are (1) the imperial railroads, such as those of Alsace-Lorraine, owned and managed by the imperial government; (2) the state railroads, controlled by Prussia, Saxony, Bavaria, and other states; and (3) private railroads, owned by incorporated companies like those of the United States and Great Britain. The state roads are most important, and those of Prussia include about one-half of the mileage of the empire.

Chemnitz is both a Manchester and a Birmingham, being known throughout the world both for its metal and its textile (hosiery, underwear, and shawls) industries. German cottons have been exported over the world, with Central and South America as the largest purchasers—the Germans,

with great energy, having sought trade there. The output of the woolen-mills is not so large as that of the cotton factories, but the foreign sales to all the leading nations, as well as the smaller buyers, are much greater. Flax from Russia supplements the home supply for the making of linens, and jute is brought from India for the jute manufactures.

About 600,000 persons are employed in the making of leather and leather goods. No other nation is so advanced as Germany in the chemical industries; the United States is her largest customer for aniline dyes and many other chemical preparations. A list of all the German manufacturing industries would nearly cover the field of human industrial enterprise. Many of the towns that are of largest industrial importance are shown on the railroad map (Fig. 104).

Commerce.—Germany has bought $40,000,000 worth of raw cotton a year from our Southern States. Having no petroleum-fields, it was one of the large customers for our kerosene. It brought great quantities of our maize, wheat, oats, meats, copper, lumber, and oil-cake. In fact, the empire purchased from our country twice the value of the goods it sold to us. The business relations between the two nations were very profitable to both of them.

The high protective tariff covers the whole empire except the free ports, and is also extended by treaty over the independent principality of Luxemburg.

Germany is like England in that its imports are mostly food and raw material and its exports mostly manufactured goods. The value of its total foreign trade is about the same as that of the United States, amounting in 1910 to $2,055,000,000 imports and $1,665,000,000 exports. What an immense amount of labor was expended upon the raw materials to produce so grand a total of manufactured goods to sell to foreign customers! These export figures illustrate how millions of men work all the while for millions of others in every part of the world.

CHAPTER XVIII

FRANCE

Position, physical features, and climate.—France has the commercial advantage of fronting both on the Atlantic and the Mediterranean, giving it easy access by water both to north and south European countries, and facilitating trade with America and the Orient. If you should draw a line on Fig. 105 from Bayonne, near Spain, to the Iron Works of Ardennes in the northeast, it would show, fairly well, the division between the low rolling plains north of the line and the higher lands and mountainous regions south of it. Most of the general manufactures are on the plain; most of the metal-working is south of the imaginary line, but it includes the iron center around Lille. Over 150 navigable streams, the Seine being most important, with a network of canals, carry an immense amount of heavy freight, mostly in small boats. Navigation is difficult in the Loire and Gironde at low water, and on the Rhone, the deepest river, owing to the too rapid current. The climate is temperate with abundant rain. The people are far more evenly distributed over the country than in Great Britain and Germany; the densest population, outside the Paris and Lyons districts, being in Normandy, on the English Channel.

Seaports.—France is poor in natural harbors. Most of the havens are artificial or river ports. Observe their position in Fig. 105, which also shows the kind of commodities tributary to them. Marseilles is the leading port, and Havre is second in importance. They illustrate the difference between manufacturing and forwarding ports. Many of the

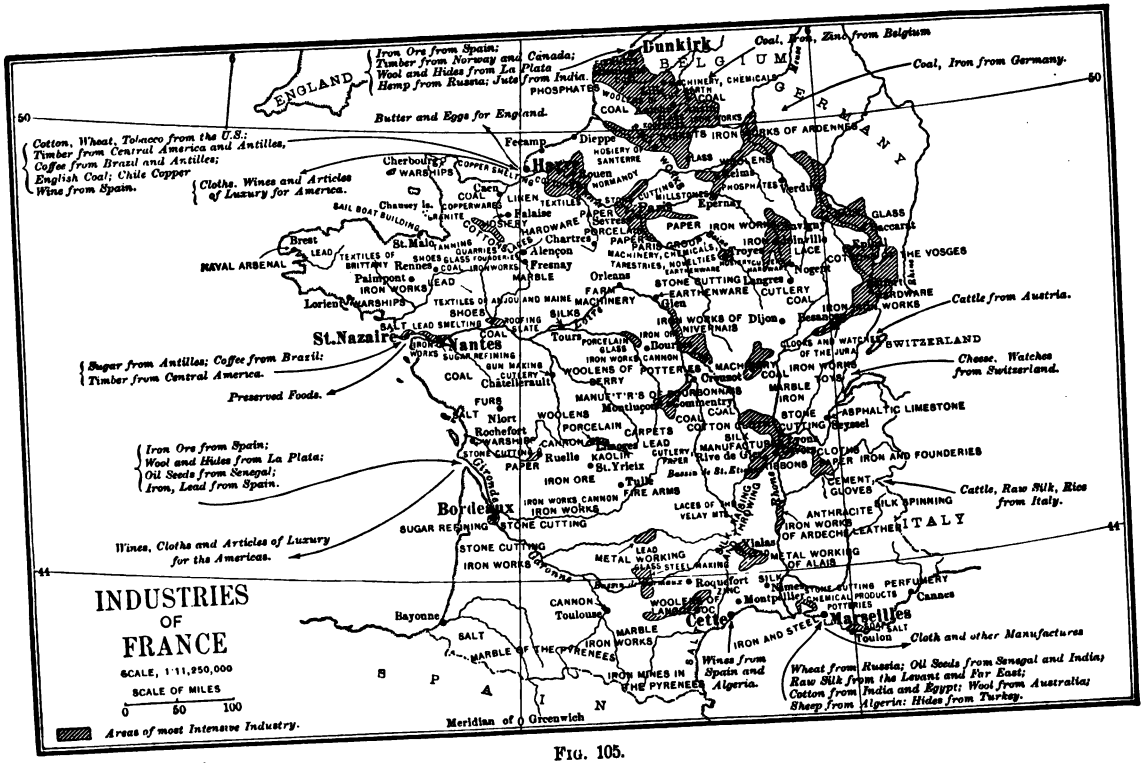


FIG. 105.

After Vidal-Lablache.

things brought to Marseilles remain there till they are turned into flour, oil, soap, and other products; but nearly everything that goes to Havre is sent inland or to sea—in other

FIG. 106.—A BIT OF MARSEILLES HARBOR.
Covered wharves are not as common in Europe as in our leading ports, but freight is quickly removed from the open wharves.

words, Havre does not combine manufacturing with the forwarding business. As Marseilles gives work to a large industrial population, it is about four times as large as Havre (Figs. 106 and 107).

Vegetable products.—The right to buy land was a blessing the French Revolution gave to the common people. The vast landed estates of the feudal nobles are now mostly cut up into small farms, owned by the men who work them. France,

though smaller than Texas, has as many farms as the United States, but they average only about 15 acres in a holding. How different this is from the conditions in Great Britain, Spain, Italy, and Russia, where large estates predominate! Half of the 39,000,000 inhabitants earn their living by agriculture, the leading industry.

In the past half century the peasantry have become wheat instead of rye eaters, with the result that France is now one of the largest wheat-growing countries, the wheat crop being worth more than all the other cereals together; still the crop is not large enough for the home need, and millions of bushels are sent from our country and Argentina. As the French prefer to grind their own flour, our millers find little trade there. The other cereals, particu-

FIG. 107.—The port of Havre.

larly oats, are large crops, but additional supplies must be imported. Observe the distribution of farm crops and animals in Fig. 108. Very few breadstuffs are exported except wheat, flour, and alimentary pastes, such as macaroni

and others whose manufacture, originating in Italy, has spread to other countries.

The post-office is the only branch of business which our Government reserves for itself; but in many other lands the

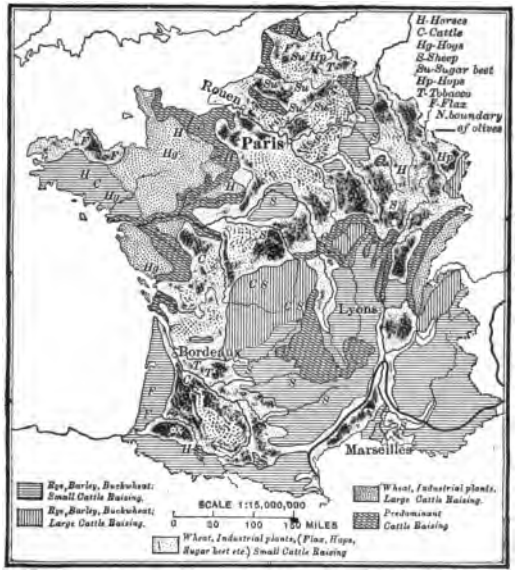


FIG. 108.—Agriculture and animal-raising.

Government monopolizes one or another industry or trade for the revenue they may yield. In France, tobacco and matches are monopolies from which the Government profits; it does not permit tobacco to be raised except in those regions which grow the best quality and the largest quantity, so the imports of raw leaf from our country, Turkey, Algeria, and elsewhere are very large. The manufacture is confined to 20 large factories, which produce about $70,000,000 worth of products a year.

Large crops of sugar-beet are grown in the extreme north, the farmers sending their raw sugar to refineries at

Paris and other cities. England buys most of the crop which is sold out of the country. Apples, pears, and southern fruits, including the olive, are raised in such large quantities that many are exported. The fruits of France are among the choicest in the world.

Wine.—Cider and beer are made and consumed in enormous quantities in the north, but wine is the national beverage (page 62). France leads the world in the quantity and quality of her wines (Fig. 109), her supremacy being due not only to favorable soil and climate, but also to painstaking and intelligent treatment of the manufactured product. Three-fourths of the wines are red; the costliest and most prized is champagne. About a third of all the wine produced is exported. Observe the northern limit of vine culture in Fig. 110.

FIG. 109.—Average annual wine crop in million gallons (total crop 3,052 million gallons).

France is poor in timber, and much lumber is brought from Scandinavia, and cabinet woods from the tropics. Wood is the common domestic fuel.

Animal products.—None of the domestic animals, except mules and goats, is in sufficient supply. Plowed lands have been increasing at the expense of pasturage. Wool has for years been the largest import, and thousands of live cattle are brought in for beef, though cattle are the greatest animal industry. Supplying the markets with fine home-grown beef is a large business, except in the far south, where cattle are raised mostly for draft purposes. The north is a great dairying region drawn upon largely by

England; the best French cheeses are particularly famous (page 72). The superior home wools are reserved for the finest products of the French looms. Swine are much

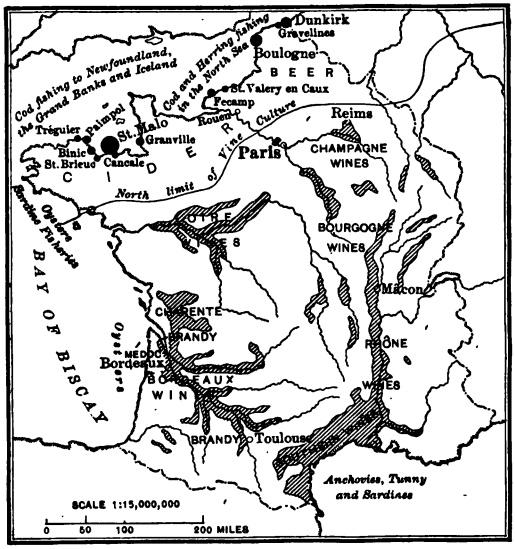


FIG. 110.—WINE AND FISHERIES.

The shaded areas are the wine-growing regions. The leading fishery ports are shown by dots of various sizes, according to relative importance.

neglected. Enormous quantities of eggs are sent abroad, mainly to England.

France has high rank among fishing countries, owing mainly to the extent of the cod fisheries in American waters and the North Sea, and the cultivation of the oyster along the Bay of Biscay and in the English Channel. The oyster, inferior to ours, is eaten only on the half-shell. Canned sardines are sent all over the world. Fig. 110 shows the nature of the sea fisheries and the leading fishing ports (Fig. 111).

Mineral products.—Although France has the fourth place among the coal- and iron-producing nations, her output of

both is very small in comparison with the countries that surpass her (Figs. 61 and 67). She must import a great deal from the countries indicated by arrows in Fig. 105. France has the further disadvantage of having to bring coal and iron together from a considerable distance, the regions around Le Creuzot and St. Étienne being the only places where they are found near each other. Here are

FIG. 111.—Sardine-fishing boats in France.

the second largest coal supplies, three-fifths of the home supply being taken from the French-Belgian field near Lille. Nine-tenths of the iron ore is mined in the great field on which the city of Nancy stands; Lille, Le Creuzot, and St. Étienne are the chief centers of steel manufactures.

France lost her largest salt-mines when she ceded a part

of Lorraine to Germany. Most of her salt is now obtained by evaporating sea water in saline marshes along the west and south coasts.

Manufactures.—France is fourth among the great industrial nations. In elegance of design and finish her products have surpassed those of all other nations. Many of her workmen are trained in art as well as in technical skill, and the results are manifest in the good taste and beauty of their products. Most of the factories are in the north, though there are many in the south as well. The center of the manufacturing industries is in Paris and its environs.

Textiles.—Textiles, employing over 700,000 persons, hold the first place. France is famous for the elegance of its silks, and Lyons is the greatest market for silk goods and the largest producer of silk dress-goods in Europe. As the silkworm industry in the Rhone valley has greatly declined, France imports from China, Japan, Italy, and Turkey nine-tenths of the raw silk she consumes. Paris and nearly all the towns on the lower Rhone produce silk goods (pages 92, 93). The chief centers of the cotton industry are in the north, the largest at Rouen, where the cheaper kinds are produced; another great group of cotton-mills is in Lille and its environs (Fig. 105). The country is unsurpassed in calico printing and dyeing. France is the third largest customer for our raw cotton, buying nearly half as much as Germany imports. Her goods suffice for the home demand, but she has very little for export. The country raises scarcely a fourth of the wool it manufactures, but woolen cloths, carpets, and tapestries are the greatest of all exports, everywhere holding their own against competition. Linen is made chiefly in the north, at Lille, and other cities convenient to the flax supplies of Belgium and Russia. Little is exported.

Among the numerous other industries are leather-working, all the large cities having immense shoe factories; kid and other gloves, a famous industry; glassware, cut-glass,

and porcelain, much of the finest of which is sold abroad. Paris is the great center of goldsmithery, bronzes, perfumery, and countless knickknacks and articles of luxury. It still leads the world in matters of taste, luxury, and fashion.

The largest railroads converge at Paris and connect the capital with the steamship lines at all the seaports.

Commerce.—France is not among the greatest competitors for the world trade. The reason is because the universal demand is for cheap machine-made goods, while the characteristic products of France, requiring manual skill and artistic treatment, do not enter so widely into this larger field. Her imports, always larger than the exports, are mainly food and raw materials. Her exports are not machinery and other heavy and bulky goods, but fine and costly textiles, innumerable novelties and artistic products, together with wine, sugar, and dairy products.

The trade relations with Great Britain are much larger than with any other country; but the cotton, cereals, petroleum, meats, and other things we sell to France, almost equal in value the coal, metals, foodstuffs, and manufactures which France buys from Great Britian.

The wheat crop of France is surpassed in quantity only by that of the United States and Russia in Europe. Much wheat land in the northeast of France was overrun by the Germans in the recent war; and nearer the Belgian border, are both coal and iron which the Germans mined and carried off in large quantities. They did not reach the great regions of coal and iron further south.

France does not import an enormous amount of food; and the coal and iron she has been compelled, for many years, to import for her industries, will, in future, be largely supplied by Alsace-Lorraine. These provinces were formerly French territory but were seized by the Germans in 1871.

CHAPTER XIX

BELGIUM AND THE NETHERLANDS

Two races in Belgium.—The northern part of Belgium is inhabited by the Flemings and the southern part by a mixture of ancient peoples speaking French, which is the official language, though more than half the people speak Flemish. We have little idea how thickly these two peoples are crowded together. Belgium is only one-fourth as large as New York State, but there are nearly as many Belgians as New Yorkers. The towns are very numerous, far more people living in them than in the rural districts.

The country is low and flat except in the southeast. The sandy soil has been made fertile by the most careful cultivation; nearly all the land is turned to some good account; the Campine (Fig. 112), once worthless bog or sand waste, now restored to fertility, is a source of rich grasses and fine butter.

Harbors and transportation.—There are no good harbors on the short seacoast. Seven-eighths of the sea trade passes through the port of Antwerp on the Schelde River, one of the leading ports of Europe, though it has access to the sea only through a foreign country. The deep Schelde empties into the North Sea in the Netherlands, but its importance for Belgium commerce is very great, as the Netherlands guarantee freedom of navigation. The canals and rivers connecting Brussels, Ghent, and Bruges (Fig. 113) with the sea have been widened, so that they may now be used by large sea vessels. These improvements will give Belgium first-class facilities for sea trade; it already possesses more

miles of railroad and navigable streams and canals, in proportion to its size, than any other country in the world.

FIG. 112.

Agriculture.—Farming is of inferior importance, though three-fourths of the land is in small, highly tilled farms or

in rich grass-lands (Fig. 112). So large a part of the people are engaged in mining or manufactures that the farmers

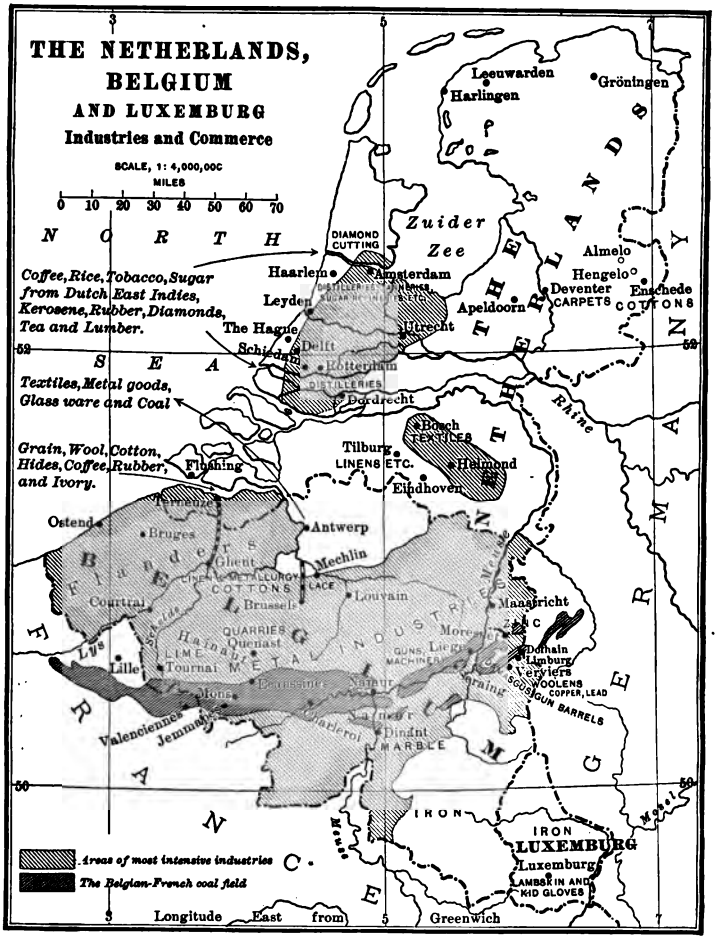


FIG. 113.

can not possibly raise enough breadstuffs to feed them, though a fourth of all the tilled land is in wheat; so great

quantities of wheat and maize are imported from our country for men and live stock. Fig. 112 clearly shows the distribution of the farm crops. Potatoes, the sugar-beet, vegetables, flowers, and flax, however, not only fill the home demand, but have a surplus for export. Flax is the wealth of the Flemish peasantry (page 93). Cattle and sheep do not begin to meet the need for food and wool, and Belgium, therefore, is among our large customers for meats.

Minerals.—Belgium is a great industrial country because she is very rich in coal (Fig. 113). Observe the great coal-field that stretches clear across the country and into France; it occupies one-twentieth of Belgium's surface, yields over 22,000,000 tons a year, three-fourths of the product being consumed at home, and most of the surplus sold to France. Iron is mined on the coal-fields around Namur and Liege, where most of it is smelted. Belgium has been called "Little England" because it also has coal and iron together; but the iron supply is not sufficient, and large quantities are brought to manufacturing towns near the coal, most of it being the rich ore of Luxemburg. Observe the zinc-mines on the eastern border; they are among the richest in Europe.

Manufactures.—You will infer from these facts that Belgium is a great manufacturing country, probably the greatest in the world in proportion to its size and population. Observe in Fig. 113 that manufactures are scattered all over the country except in the southeast and the Campine region of the north. Over 1,000,000 Belgians are at work in the thousands of factories and shops. Observe how comparatively small is the area of manufactures in the Netherlands. The metal industries, right on the field of coal and iron, are first in importance. Everything is made—from cannon and machinery to tools and nails—in the great metal-working region, from Mons in the west to Verviers in the east.

Belgium makes the finest of cotton goods. Our raw cotton is taken up the Schelde River to Ghent, the leading cotton center, though several other towns are very im-

portant. Many cheap cottons, too, are made for the barbarous tribes of the Congo. The best, and most, linen is made at Courtrai and Ghent, near the great flax-fields of Flanders. Over 150,000 women and girls at Mechlin and other places are making the famous Mechlin, Brussels, point, and other laces. The great woolen industries are on the eastern border at Verviers, Dolhain, and Limburg, where the home supplies of wool are largest.

Glass must be mentioned, though many industries can not be noticed here. Belgian window glass, mirrors, and vessels have a high place in the world's markets, and the exports are large. The glass and porcelain works are along the coal belt, from Jemmapes to Liège.

Commerce.—It is evident that the great business of Belgium is the making of goods and selling them at home and abroad. Mining and manufactures have made it one of the richest countries in Europe. As it can consume only a part of the goods it makes, it can not be prosperous unless it sells the large surplus in foreign markets; the Belgians, therefore, push their foreign trade with much energy. Their largest trade is with the neighboring countries, except that their imports from the United States are usually larger than from any other country except France.

The country buys foodstuffs and raw materials, and sells manufactures. Cereals, fibers, chemicals, and timber are the largest imports. Timber is a great import, because the country has meager forests, and needs the lumber of Scandinavia, the United States, and other countries. Antwerp is the greatest ivory market, because the Belgians control the Congo Colony, the largest source of ivory. The principal exports are yarn, coal, cloths, machinery, and metal wares, beet-sugar, glass, and zinc. We buy from Belgium less than half as much as we sell to her. While Germany occupied Belgium (1914-18) she worked the iron and coal mines besides impoverishing the people in many ways. No wonder the Belgians were glad when the enemy was expelled from their land.

The Grand Duchy of Luxemburg.—This small neutral area, between Belgium and Germany (Fig. 113), is rich in iron ore, which it sells to neighboring countries. Iron and gloves are the chief manufactures.

The Netherlands is poor in manufactures and rich in cattle and commerce.—It is a very prosperous country, but what a contrast it presents to Belgium! It has no iron, and little coal, and therefore its manufactures are small. Belgium has raw materials, or buys them, enhances their value many times by manufacture, and sells the products to pay for her imports. How can the Dutch kingdom pay for its imports?

It has one great resource—its vast colonial possessions (Fig. 16), sixty times larger than the mother country and very rich in all colonial products (page 36). It imports these products, manufactures some of them, as Java raw sugar and quinin, and Sumatra tobacco, and sells them far and wide. The result is that the Netherlands is one of the greatest commercial nations, with a foreign trade far larger than that of Belgium, though their population is smaller. The Dutch are the most conspicuous example of the fact that commerce and agriculture, without manufactures, may make a nation rich.

Farming.—Nearly half of the country lies below the level of the sea, so that great sea-walls have been built to keep the ocean out of the land. The polders—once unhealthful marshes, now drained—and the other rich grass lands near the sea (Fig. 112), sustain great numbers of cattle, the largest resource of the Dutch farmer, who excels nearly all others in this industry. Many fat cattle are sent to England; the whole world knows of the small, round Edam cheeses, of which as many as 200,000 at a time are often stored at Alkmaar awaiting export. Dairying is a great industry near the sea, where also the largest number of horses are raised; millions of sheep, prized more for their flesh than their wool, graze in the south. Though

nearly a third of the land is sandy and unproductive, great quantities of vegetables and flowers are raised for the home and British markets; the beet-fields supply thousands of

FIG. 114.—Canal-boats at Rotterdam.

tons of sugar for the refineries; and factories, mainly at Amsterdam and Utrecht, work up the home crop of tobacco; the zone of cereals, chiefly rye, is very important.

The oyster and herring are taken in large quantities, and Dutch fishermen are very active in North Sea and Iceland cod fisheries.

A network of canals covers the flat country (Fig. 114). There is no coasting trade, because the Dutch prefer to carry freight from one of their ports to another on the

canals. These canals connect with the Rhine, the Maas (Meuse, in Belgium), and the Schelde, so that a great deal of freight passes by water between the Dutch cities and hundreds of industrial towns in Germany and Belgium. Railroads also give large transportation facilities, but are used mostly for the passenger and the international freight trade.

The lack of minerals.—The country is poor in minerals, because it is largely composed of sand or soil (detritus) washed away from the banks of the Rhine and other rivers; in other words, its formation is alluvial, and the tiny particles brought by water were not worn away from mineral-bearing rocks. There is scarcely a stone in the country (page 2), though brick and pottery clays abound, so that brickyards are everywhere, and the glazed earthenware of Delft is famous. Without coal or water-power, wind-power is utilized to a larger extent than by any other nation. We scarcely see a picture of any part of the Netherlands without a windmill in it.

Manufactures.—Coal and iron are imported from England and Germany for the limited iron industries of Amsterdam, The Hague, and Flushing. Most of the industries relate to the transformation of agricultural products, as the liqueur, curaçao, made from the orange-peel grown in the Dutch island of that name; Holland gin, distilled from the rye; cigars (many millions a year) from home-grown or East Indies leaf. Some textiles are produced at towns indicated in Fig. 113. Diamond-cutting, a great industry at Amsterdam, is not now so important as formerly, because the business has extended to Antwerp, Paris, New York, and other cities.

The transit trade.—A very profitable branch of commerce is the business of carrying freight for other nations. A great deal of the trade of Germany, and even of Austria and Switzerland, with other countries passes through the Netherlands. The Dutch reap a large share of the profits

of this carrying trade; the money is spent at home and the nation benefits by it. Rotterdam and Amsterdam handle most of the sea trade; and Rotterdam, with its splendid position at the mouth of the Rhine, is one of the greatest forwarding ports for other nations in the world. Do you not think that France's position also enables it to reap large profits from the transit trade?

Commerce.—The Dutch are great sailors and most of the trade of their country is maritime. Its largest feature is the import and reexport of colonial products. We buy a great deal of Sumatra tobacco, Java coffee, and sugar and other products of the Dutch East Indies; but nearly all of them go to the Netherlands first and the Dutch sell them to us at a good profit; in the same way they spread the products of their colonies through all the great countries, and they make at home or buy abroad cotton goods and many other things which they sell to the colonies. Thus they are great merchants, their best customers, excepting Europe, being their colonies. They have a very wide market for their colonial products; their market for home products, mainly butter, cheese, live cattle, meat, and oleomargarine, is restricted to the neighboring countries. Their imports from the near-by countries are chiefly manufactures, coal, metals, and lumber. They added to their plowed lands by cutting down their timber, and so need much lumber. We sell them such commodities as they buy from Europe except coal, and in addition foodstuffs, leaf tobacco, and kerosene—about one-eighth of all they purchase abroad. Compare the figures of their exports and imports with those of Belgium (statistical tables).

The fact that the Netherlands buy not only food and raw materials, but must depend largely upon other countries for manufactured goods, explains why the country is a free-trade nation, so that the people may procure the necessities and comforts of life cheaply.

CHAPTER XX

SCANDINAVIA

Sweden, Norway, Denmark.

The kingdoms of Sweden and Norway.—The kingdoms stand on a high plateau, forming the largest peninsula of Europe. As the west coast receives the warm, moist Atlantic winds, the fifty ports are open the year round. The high mountain-ranges behind these ports ward off the warm winds from the east side of the peninsula, so that the east-coast ports are closed by ice from three to five months in the year; thus these mountains have a great effect upon climate and commerce (page 10). The people are strong, industrious, honest, and well educated.

Agriculture.—Much less than half the people are farmers. South of Stockholm (Fig. 115), in the large plain which stretches across the country, are found most of the fields of rye, oats, barley, and wheat; here, too, are most of the cattle and sheep. As the people can not raise enough breadstuffs, they must import a considerable quantity, including a little of our wheat; some oats are exported. They raise the sugar-beet, but not enough to supply all the sugar they need. The sheep can not supply all the wool needed for the mills of Sweden; the cattle alone suffice for the needs of the kingdom. Millions of pounds of butter are exported, mainly to England.

The forests.—North of the farm-lands stretch the forests of pines, firs, and spruces. They cover the most of the country. The rivers, few of them useful for navigation,

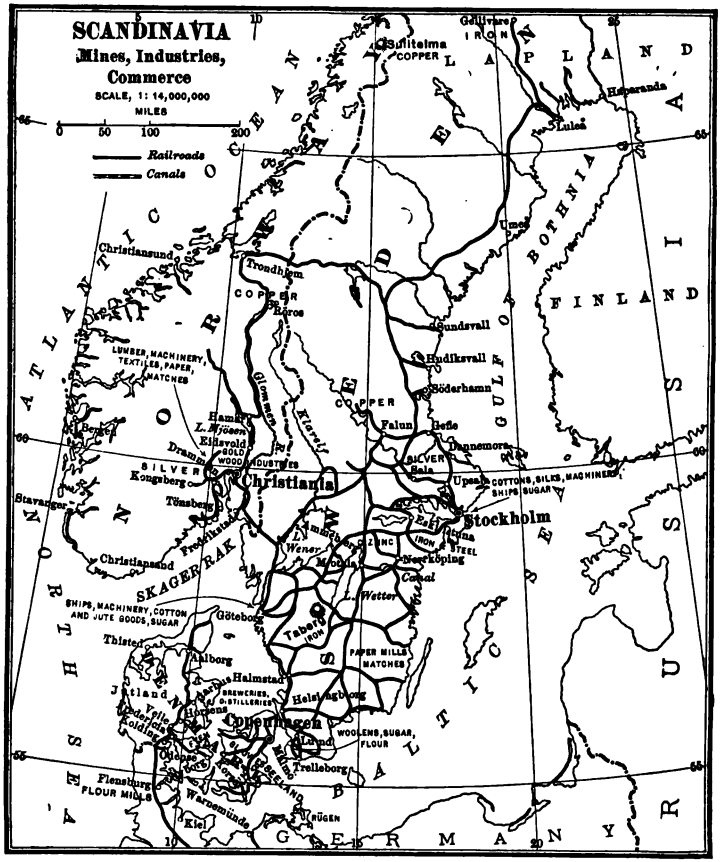


FIG. 115.—The most important Swedish railroad connects Stockholm and Göteborg, the leading ports. A number of branches north and south of the main line provide the more populous part of the country with adequate transportation. The most important of these branches connect the capital with Christiania on the north and Malmö on the south. Trondhjem, a fiord port that never freezes, has become the winter port of Stockholm since the railroad across the peninsula was built. Observe the short branch lines from the northern railroad, which carry timber, naval stores, and iron and copper ores to small shipping ports on the Gulf of Bothnia. The most important of these ports is Gefle, the center of the Swedish forest industries.

furnish water-power to run over 5,000 sawmills. No other source of lumber is so convenient to the great importing countries of north Europe; the kingdoms, therefore, are the greatest lumber- and timber-exporting countries in the world. As trees grow slowly on the rocky soil, their texture is close-grained and tough, and the lumber they supply is unsurpassed. Lumber, turpentine, and rosin are nearly half the exports.

The fisheries.—This industry is very important. Three-fourths of the catch is taken on the Norway coasts, where the cod of the north and the herring of the south are among the most important fisheries of the world. The greatest center is the Lofoten Islands, north of the arctic circle, where 80,000 men, in their small vessels, are busy during the spring months catching and curing cod. Four-fifths of the cod and herring catch is sent to the fish-buying countries of Europe. Mackerel and salmon are also important. Fish appears on the table of the poorest peasant every day.

Minerals.—Iron ores, many of them of the very best steel-making quality, are the largest source of mineral wealth. Observe in Fig. 115 the great Gellivare iron-ore mines, 130 miles north of the arctic circle, to which a railroad has been built to deliver the ores at the port of Luleä. The road has now been extended to the Atlantic coast. Other ores mined near Gefle, Falun, and Dannemora make the output about 4,000,000 tons a year. If Sweden had more than the scantiest supply of coal she might become a great pig iron and steel-making country; as it is, a great part of the ore is exported to England and Germany. Silver, copper, and zinc are worked as indicated in Fig. 115.

Manufactures.—The kingdoms are not great manufacturing countries, because coal is lacking and population and capital are small. Some steel is made, but no country using charcoal to smelt iron ores can ever compete with the great steel producers. Home-made steel is used in the

manufacture of machinery, tools, and hardware at several towns in the Stockholm district. The chief industries are derived from wood—such as cheap furniture, wood-pulp, and matches; many tons of matches are sent to all parts of the world. The cotton- and woolen-mills of the Stockholm district and Göteborg are far from filling the home needs; but women at their spinning-wheels and looms, in the homes, nearly fill the demand for linen. These facts show that most manufactures must come from foreign lands.

Ports and railroads.—All ports on the west coast of Norway are fishing ports. Göteborg is the most active, because it is more conveniently situated than Stockholm for trade with all the North Sea and Baltic ports that command most of the trade of the kingdom; but Stockholm is also a great commercial center, being the distributing point by sea and rail for a large part of Sweden. Christiania is an industrial city and, with neighboring ports, ships much lumber.

Maritime enterprise.—The Norwegians are a race of sailors, with the largest merchant marine, in proportion to population, in the world. As their own commerce is small, their ships and crews take part in the trade of many other countries, as, for example, in our tropical fruit trade. They help to pay for the many things Norway buys from other countries with the money they earn by carrying foreign freight.

Commerce.—The kingdoms need to buy many things, but have not many commodities to sell. The forests, fisheries, iron- and zinc-mines, dairies, and oat-fields yield the export articles. A little coal is mined, but far more is imported; no fruits, salt, cotton, or coffee being produced, they must be purchased abroad. Foreign textiles, wool, machinery, railroad iron, hog products, and many other things must be bought in other lands. The result is that the imports are much larger than the exports.

The larger part of their trade is with the countries bordering on the Baltic and North Seas. We have lumber, fish, metals, and dairy products near at hand, and so need to buy only about $5,000,000 a year of such things as the kingdoms sell; but the Swedes and Norwegians need to buy our wheat, provisions, tools, machinery, leather goods, and other articles worth two to four times as much every year as the things they sell to us.

The population is a little larger than that of Belgium, but the foreign trade is not a third as great as Belgium's commerce.

Denmark.—This little kingdom is the lowest country in Europe, except the Netherlands. The western half forms the peninsula of Jutland, with many fine pastures, but also many peat-bogs and sand wastes. Fertile islands in the Baltic form the eastern and most valuable part of the kingdom. The waterways between the islands make communications very easy. All the ports are on the Baltic, and have the disadvantage of freezing in winter.

Agriculture and dairying.—Most of the Danes are farmers, and few people have equaled their success in tilling the soil and cattle-raising. The dairy industry leads; and with half the land in grass, hay, oats, and root crops for cattle, horses, and sheep, it is no wonder that breadstuffs must be imported, though large crops of cereals are raised. Dairy products are the largest exports, the Danes having secured a great market, because they take so much pains to make excellent butter and cheese. Great Britain, their best customer, buys more than $33,000,000 worth of butter from them every year. Do you not think the Danes are showing that it is not only right but also most profitable to turn out the very best and most honest products a man can produce?

Manufactures.—With over three-fourths of the people engaged in agriculture, and with no coal, metals, or water-power, it is natural that the manufactures should be small

and only for home consumption. They depend for material mostly upon agricultural products, as flour mills, beet-sugar works, distilleries, and breweries. Tanning is important where there are so many cattle, and leather goods, tobacco wares, sail cloth, and a few other home-made articles have a great sale among the farmers and sailors of the kingdom. Copenhagen makes machinery and porcelain and builds ships. Odense is also an important industrial town.

The forwarding trade.—Copenhagen, the only large port, standing at the entrance to the Baltic, does a great business in forwarding freight to all the Baltic ports. It uses smaller steamers to send goods that large vessels have brought to ports of Sweden, Russia, and Germany. To facilitate this growing trade a free port was established in 1894 (Fig. 102).

Commerce.—Butter, eggs, meat, and live animals are almost the only exports. As the Danes have little timber, they must buy lumber from Norway and Sweden. Coal, textiles, machinery, hardware, and breadstuffs are also large purchases. Most of the trade is with north Europe and the United States. We send many manufactures, besides breadstuffs and cotton.

Danish colonies.—The Faroe Islands raise many sheep and export wool, down and feathers from the eider-duck and other birds. Iceland has steam connections with Copenhagen every three weeks. Its exports of wool, eider-down, and minerals exceed the imports of textiles, food-stuffs, hardware, and coal. The trade of Greenland, except the whale fisheries (exports, furs, hides, eider-down, and seal-oil), is a monopoly of the Danish Government. The Danish West Indies produce sugar. (See Colonies, p. 36.)

CHAPTER XXI

SWITZERLAND

Switzerland's disadvantages.—We have seen that abundance of coal and iron and great shipping ports have helped to place the United States and Great Britain in the front of the industrial and commercial nations. Let us now turn to the little republic of Switzerland, which, without a mile of seacoast and with almost no coal or iron, is one of the leading industrial nations and has large commerce. We may be sure that Switzerland has some great advantages which offset her unfavorable conditions.

Physical features.—One-half of this mountainous land lies above the zone of agriculture, producing very little except for the grass-lands on the mountainsides, below the snow and ice, where many thousands of cattle graze in summer (Fig. 116). But between the Jura Mountains on the north and the Alps on the south is a wide, hilly, well-watered plain; here is where most of the people live on their farms or in the towns or cities, in which the hum of mills and factories is always heard. The southern slopes of many hills and mountains, catching the warmest rays of the sun, are planted with vineyards and orchards. There are no navigable rivers, but many lakes on the plain float a great deal of the internal trade. Both the highways and the railroads are unsurpassed; and passenger or freight rates by water or rail are very cheap (Fig. 117).

Agriculture.—Only about one-sixth of the country is tilled. Switzerland buys from Hungary, Russia, and the United States nearly three times as much wheat and twice

as much rye as she produces. Apples, pears, and cherries are a larger source of profit than grain. Wine culture is a

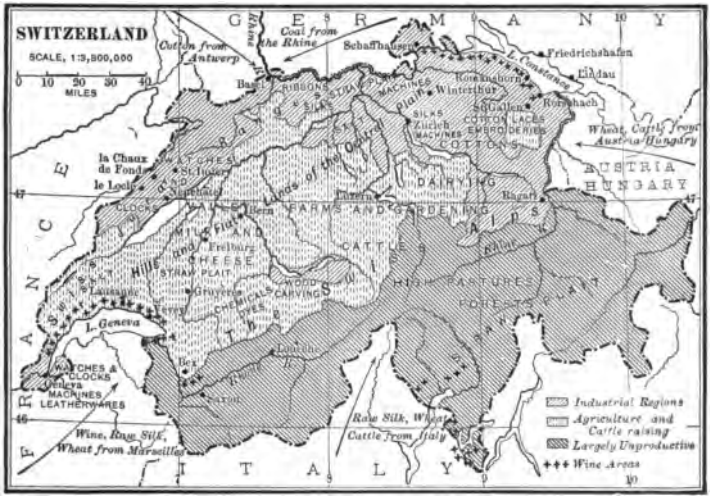


FIG. 116.—Industries and agriculture.

very profitable industry, but the Swiss import much more wine than they make.

The wide-spread hay and pasture lands make animal-raising much more important than tillage. The Swiss are as famous for cheese as the Danes are for butter. In the spring tens of thousands of cows are driven up to the highland pastures among the mountains, and are kept there all summer, tended by many herders, who milk the cows and make the cheese and butter; cheese is the larger product, as it is more profitable than butter-making; supplies are often taken to the herders and the dairy products are carried down to the markets. Still greater quantities of cheese also are made on the plain; three-fifths of the product is sent to all parts of the world. Many sheep and goats (for kid-skins and Morocco leather) also pasture in the highlands.

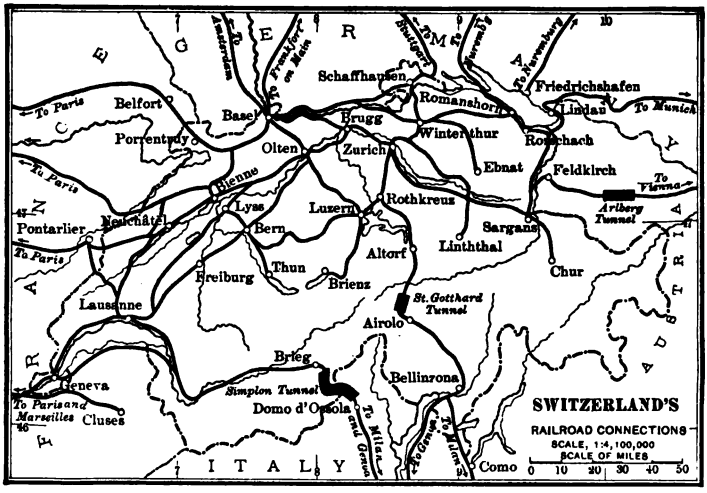


Fig. 117.—Five railroads crossing the Jura Mountains connect with through lines to the Atlantic and North Sea ports of France, Belgium, Germany, and the Netherlands. The route from France to Austria through Basel and Zurich passes through the Arlberg tunnel, six and a half miles long; the greatest international route passes *via* Basel and Luzern through the St. Gotthard tunnel, nine and a quarter miles long, to Milan and Genoa; the Simplon tunnel, twelve and a half miles long, was opened in 1906 and gives Paris the most direct communication with Milan, the largest center of Italian trade. Observe the routes from all the frontiers leading to the ports and commercial centers of the surrounding countries.

Geneva, standing at the point where the Rhone River leaves Lake Geneva, is a distributing and forwarding city: the convergence of railroads at Basel makes it a very important commercial center and forwarding point; Zurich is the largest, most beautiful, and industrially active city.

Though Switzerland has over 2,000,000 cattle, about 50,000 fat beeves are imported for food every summer, when the mountains are filled with tourists. The largest imports, in fact, are grain, cattle, and other food supplies.

The country is almost destitute of mineral resources except rock-salt and building stone. A very little iron and anthracite are mined.

Manufactures.—The really great industry of the country is manufacturing. Though Switzerland has no steam coal, the mountain torrents supply water-power which

drives most of the machinery. It is a long distance to seaports, but Swiss goods have a reputation for excellence and fineness, and therefore, being comparatively high-priced, they can bear the cost of transportation to the sea and foreign countries. Observe in Fig. 116 how the industries are grouped along the east, north, and west sides of the central plain. The factory regions fringe the farm-lands on three sides. There are large industrial centers also far out in the plain. Zurich, Bern, and St. Gallen are the largest manufacturing cities.

The textile and metal industries are most important. Swiss cotton cloths, made in St. Gallen and the neighboring cantons, rival the best British fabrics; these cloths and raw and dyed yarns are sent all over the world. The exports of silk goods (dress goods at Zurich and ribbons at Basel) are even more valuable (page 93). Some raw silk is produced, but more is imported. Machine-made laces employ about 20,000 operatives. Woolen manufactures, far behind cotton and silk, figure in the foreign trade only in the imports.

Machinery, watches and clocks, and jewelry are the most notable features of the metal industries. The gold and silver which Switzerland imports for her watch and jewelry industries sometimes surpass in value the large quantities of coal that she purchases. Observe the centers of the watch industry in the west, where hundreds of thousands of watches, many of them cheap timepieces, are made every year; five-sixths of them are exported. Large supplies of iron and steel are imported and paid for by machinery and other iron products that are sold abroad. Machinery, made most extensively at Winterthur, Zurich, and Geneva, has a high reputation and sells readily in other countries.

A large amount of manufacturing is carried on at the homes of the operatives, such as some kinds of silk and embroidery products, straw-plaiting, and much of the watch- and clock-making.

Commerce.—The neighbors of Switzerland figure most largely in her foreign trade. Germany, France, Austria-Hungary, and Italy buy most of her export manufactures, and sell her many of the manufacturing and food materials she needs. Next to food, raw silk, coming from Italy and the Orient, is the largest import. Nearly a third of the entire purchases are coal, coke, iron, sugar and other food-stuffs coming from Germany. Wheat, cotton, and petroleum are about two-thirds of the value of imports from the United States. Genoa, Marseilles, and the German ports all share in forwarding the goods we send to Switzerland.

Practically all the exports are manufactures. Silk goods head the list, and after them come cotton yarn and cloths, watches, machinery (particularly for spinning and weaving), cheese, condensed milk, and other articles. Cotton embroideries, the largest export to the United States, are worth more than double the raw cotton that Switzerland buys in this country.

Abundant water-power, excellent manufactures, near-by markets, and fine communications with seaports, compensate Switzerland for distance from the sea, poverty in coal and iron, and insufficient home supplies of food. The Alpine scenery, also, attracting millions of tourists, is a money-making resource that goes far toward buying the foreign food and manufacturing materials required.

CHAPTER XXII

AUSTRIA-HUNGARY

The mixture of races.—There are four principal and several secondary races in this great monarchy, each speaking its own language. The Germans are most numerous, live chiefly in Austria, and their language is the leading commercial tongue. Sometimes there is bitter strife between the Germans and the Magyars of Hungary, or the Czechs and other branches of the Slavonic race. Not long ago the Czechs refused, for a time, to trade with the Germans. The empire is thus seen to lack the national patriotism that makes all Frenchmen, for example, willing to expend millions of the public money in canals, railroads, and harbors for the common good of the country. No nation can develop its natural riches to the best advantage unless all the people bring willing hands and hearts to the work. Austria-Hungary lacks national unity; this is one of the reasons why the vast resources of the empire are yet only partly developed.

Position and communications.—Just half-way between the equator and the north pole, the southern provinces, on the Adriatic, have mild winters and dry summers and produce the olive, fig, and other southern fruits. In the east, the great and small flat plains of Hungary, larger than Oklahoma, are hot in summer and cold in winter, like our western prairies, and excel in grain and live-stock products. The hilly and mountainous west is adapted for general agriculture. Only the Alps have large rainfall, and the quantity of cereals varies greatly with the amount of rain.

Though walled in by mountains and highlands, the empire has good communications with other lands through the deep valleys, the mountain passes, and the navigable rivers. The Elbe, navigable from above Prague (Fig. 101), is the cheapest means of communication between Austria, the North Sea, and the Atlantic. The Vistula, navigable to Cracow (Fig. 101), connects the eastern part of the empire with Warsaw and Danzig on the Baltic. The Danube system, invaluable for internal trade, is not so important for international commerce, because it drains to an inland sea (Fig. 119) far from the great foreign centers of trade. Unfortunately, no important rivers flow to the Adriatic, railroads being the only means of communications with Trieste (the port of Austria) and Fiume (the outlet for Hungary's wheat). The railroads, only a third as extensive as the French system, converge at Vienna and Budapest, the great commercial and industrial centers, and at the two ports.

Agriculture.—Most of the people till the land or raise live stock, utilizing nearly all the soil except the snow mountains, and a few barren or marshy districts; so the empire, with immense resources for manufacturing, is mainly agricultural. The farmers produce only wheat, cattle, sugar, and eggs in large export quantities. Farm machinery is used only on the large estates, the peasantry clinging to primitive methods of tillage. The enormous potato crop barely meets the home demand. Maize is imported from Rumania and the United States, though it grows well in the south.

The great crop is wheat, on the alluvial plain of Hungary, one of the granaries of the world (Fig. 118). Large quantities are sent to the wheat-buying countries of Europe; they pay the highest prices also for Hungarian flour, a superior article, milled at Budapest and elsewhere by the best processes. It is wheat and its products alone that make the empire very important in agricultural exports.

Tobacco is a Government monopoly, manufactured in only about forty factories, the state also buying millions of Havana cigars and retailing them.

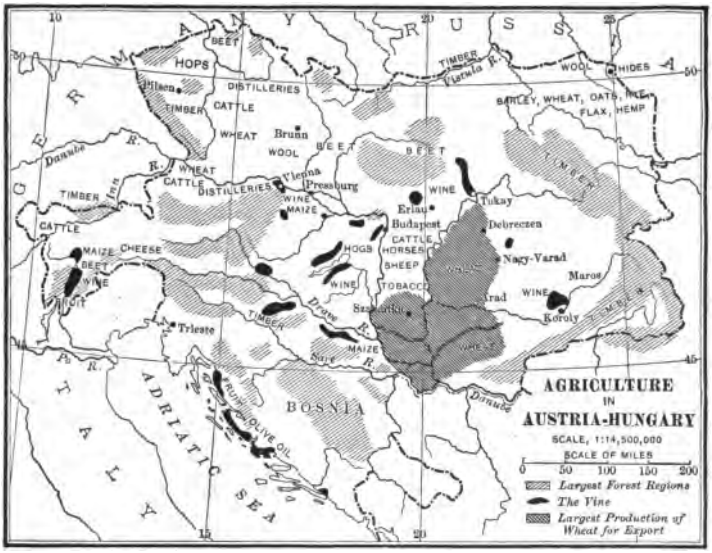


FIG. 118.

Wine.—Wine culture is a large resource in the southern part of the empire (Fig. 118). The wines of Hungary, Tokay, and others are most esteemed, and supply about half of the output. The methods of production, far inferior to those of France, are improving under Government encouragement. The distinctive excellencies of a few Hungarian wines make them important exports, though the empire still buys from Italy far more wine than it sells abroad.

Animals.—With a fourth of the land in pastures, more horses are raised than in any other country of Europe except Russia. Hungary is famous for fine mules, this animal flourishing in all the southern countries of Europe. There

are more than enough cattle for the home demand, though the quality might be better. Many stall-fed cattle are sold in Switzerland and other neighboring countries. Two billion eggs a year are exported.

Forests.—About a third of the land is in forests (Fig. 118), which are a large source of wealth; lumber and staves for wine and beer casks are sent to Germany, Italy, and France.

Minerals.—The resources of the mines are enormous, but the empire as yet utilizes this great wealth only to a moderate extent. Observe in Fig. 119 the distribution of the minerals. In spite of the great coal-fields of the north, coal is imported from Germany to feed the large industries there. The best iron ores, unfortunately, are not found near the coal; some of them are smelted with charcoal; the distance between coal and iron diminishes the importance of Austria's iron industries.

Manufactures.—Several influences tend to keep the manufacturing industries in a subordinate place. The slow introduction of new machinery and methods, the situation of the industrial centers far from the ocean, race animosities, and high freight rates, all help to keep Austria out of the list of the great manufacturing countries; but still her varied industries supply a large part of the home demand. Fig. 119 shows that the textile industries are mostly grouped on the northern coal-fields, and that Vienna also, with its great silk, carpet, machinery, and fancy goods industries is another center of intense industrial activity. Budapest is the only great center in Hungary. The population, naturally, is most dense in these regions. The cotton-mills, however, do not make enough cotton cloth to supply the country; and though the woolen-mills export cloth, they import a great deal of yarn. The metal industries, in the north among the cotton- and woolen-mills, at Vienna, and in the region west and southwest of it, produce large quantities of machinery, tools, and railroad materials.

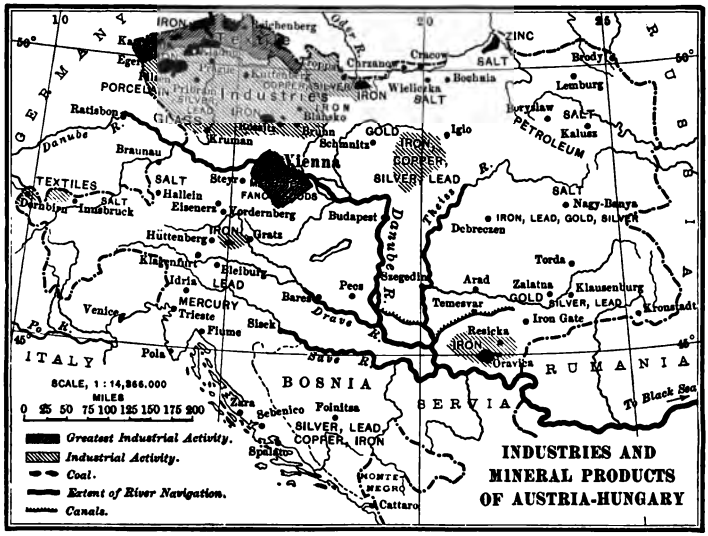


FIG. 119.—The lead mines of Bleiburg are the richest in Europe. The quicksilver mines at Idria are surpassed in Europe only by the Spanish mines at Almaden. The empire excels all other European countries in salt resources, though not in the quantity produced. The most remarkable development is in the mines of Wieliczka-Bochnia, in Galicia, where the mass of rock salt is 300 miles long and 1,200 feet thick. Thirty miles of galleries have been dug into this mass, and mining villages stand far below the surface. Petroleum is produced in Galicia, but so much cheap Russian kerosene is imported that small use is made of the local oil resources. The map shows the distribution of gold, silver, and copper, none of which is very important.

Enormous quantities of grain and other freight are carried on the Theiss, Drave, and Save, tributaries of the Danube. A canal, begun in 1902, was finally completed between the Theiss and Danube to shorten the distance by water to Budapest and Vienna.

Our imports of Austrian bent-wood furniture come mainly from Vienna. Bohemian glass, famous all over the world, is a product of the north, with Pilsen, Eger, and neighboring places as the chief centers of this and other glass and porcelain industries. The beer of Pilsen and Vienna—the product, in part, of the superior hops of Bohemia—is sent all over the world. Among the other industries are leather-wares, Austrian gloves being among the large exports.

Commerce.—Several steamship-lines from the two ports make regular connections with Mediterranean, Oriental, and United States ports; but most of the European trade goes overland. With a population nearly seven times as great as that of Belgium, the empire has a smaller foreign trade. Four-sevenths of the foreign purchases are raw or partly manufactured materials, such as cotton, wool and yarn, and cloth; the balance is machinery and general manufactures. Germany has naturally the larger share of the trade, with England next in importance. The leading exports have been mentioned except coal, for though Austria does not mine enough for her own needs, she sells a great deal to Italy, which has no coal. Egypt supplies two-thirds of the cotton. We sell cotton, maize, provisions, and other things to the value of about $13,000,000 a year, which is fully equal to the value of the raw sugar, glassware, gloves, porcelain, musical instruments, and beer that we purchase from the empire.

The great need of Austria-Hungary is larger development of the mining and manufacturing industries.

CHAPTER XXIII

RUSSIA IN EUROPE

MORE than one-half of Europe is included in Russia proper. This vast region, though thinly inhabited, contains about as many human beings as the whole of North America. The people live on a low plain, few parts of which are more than 300 to 600 feet above sea-level. We should expect that the population would be small in the forest regions of the north and in the grazing lands and steppes of the extreme south; in fact, most of the Russians live on the almost treeless plains between the forests of the north and the steppes of the south. Observe the region marked "Black-earth Land," the greatest region of agriculture. The rich soil of this land supports more than one-half of the Russians and produces nearly seven-tenths of the great grain crop of the country. Fig. 120 gives a clear idea of the vegetable and animal products of Russia.

Climate.—As the country extends from the Arctic Ocean to the latitude of Italy, it has much variety of climate. Vineyards overlook the Black Sea, while the soil in the far north is perpetually frozen. In the long and cold winters the rivers and canals freeze, so that the greatest highways of the country are closed for months. The summers, south of the forests, are hot and the rainfall during the growing months is sometimes so small that crop failure and famine afflict large districts.

Agriculture.—Farming is the greatest resource. Russia pays for the manufactures she buys with the farm products she exports. Agriculture, however, is in a very backward

Fig. 120.—The vegetation may be divided into five areas: (1) The tundra (treeless land), on the arctic coast, growing reindeer-moss, lichens, and stunted shrubs; (2) the forest, south of the tundra, covering more than a third of the country, extending over the whole north and part of the central regions; (3) the farm lands, where most of the root, grain, and fiber crops are grown, stretching in a wide zone south of the forests. (This agricultural zone or black-earth region, covered to various depths with a dark, rich, vegetable humus, is Russia's greatest source of wealth, as it is the great wheat-growing region.) (4) The fertile steppes of the southwest and south, where millions of cattle, sheep, and horses graze; (5) the sterile or salt steppes of the southeast, unfertile on account of very small precipitation, inhabited only by nomads.

state. The peasantry are ignorant, farm machinery is used only on the larger estates, and the land is so poorly tilled that English farmers raise from two to four times as much grain to the acre as the Russian farmers. No detached, finely kept farms, such as are found everywhere in our country, are to be seen. The peasant lives in a village and goes out in the morning to till land allotted to him but owned by the community. Recently, however, the Government has begun to make it possible for the more thrifty farmers to buy their little holdings.

The great crops are grain, potatoes, sugar-beet, flax, hemp, and tobacco. No country, except the United States, exports so much grain as Russia sells to other lands. Poor as the farming is, Russia produces about two-thirds of the oats and half of the rye of Europe, more barley than any other European country, more hemp and flax than any other country in the world, and a wheat crop that is surpassed only in our own land. Rye, the leading home breadstuff, yields double the quantity of the wheat crop, but is not so important for export as wheat. In the best wheat years Russia exports as much as 95,000,000 bushels of wheat. A large part of the great potato crop is used in the manufacture of alcoholic spirits, as on the plains of Prussia (page 177). The Government has long desired that Russia should produce all the sugar it consumes; this result has been accomplished, beet-sugar not only supplying all the home demand, but also much of the sugar required in all Black Sea countries and Persia. Flax and hemp fibers are the largest export except grain; Russia controls the flax markets of the world. The country ranks after Germany and Austria-Hungary in the production of tobacco, growing about 180,000,000 pounds a year. Wine, produced only in the south, is a large crop, but does not meet the home demand. Observe in Fig. 120 the chief areas devoted to these products.

The forests yield an immense quantity of fuel and lum-

ber. Wood is the chief fuel not only in the houses, but also for steam in the factories, and even for smelting iron ores (charcoal). The wood exports to the lumber and timber importing countries of north Europe amount to about $40,000,000 a year.

Animal products.—In the forests live large numbers of stags, elks, wolves, squirrels, lynxes, beavers, bears, and other animals whose skins and furs are in such demand that the fruits of the chase are very valuable. Though Russia has not only the most but the best horses in Europe, the breeding of other animals is carried on so unskilfully that they are quite inferior. Most of the cattle and sheep are raised on the wide southern steppes. The dairy industry flourishes only north of the steppes, near the cities where butter and cheese are in large demand; but the main purpose of cattle-raising is for meat, hides, and tallow. The sheep, better in quality than the cattle, produce more wool than any flocks of Europe except those of Great Britain, Russian woolen-mills consuming nearly the entire wool crop. Bristles are about the only exports provided by the millions of swine. Russia has much to learn from other nations as to the most profitable methods of utilizing domestic animals.

Minerals.—Russia has enormous wealth underground, but development has been slow on account of poor communications with the mining regions, antiquated methods of mining, and the exhaustion of the wood-fuel supplies in the mining districts. Observe (Fig. 121) the distribution of the large coal-fields: the central coal supply near Moscow, feeding its large industries; the Donetz field in the south, where there are large iron and other industries; and the coal southwest of Warsaw, where there are large cotton and metal industries. These fields now supply four-fifths of the home demand, but England sends a great deal to St. Petersburg and other Baltic cities. Most of the iron-mines are not yet connected by rail with the main sources of

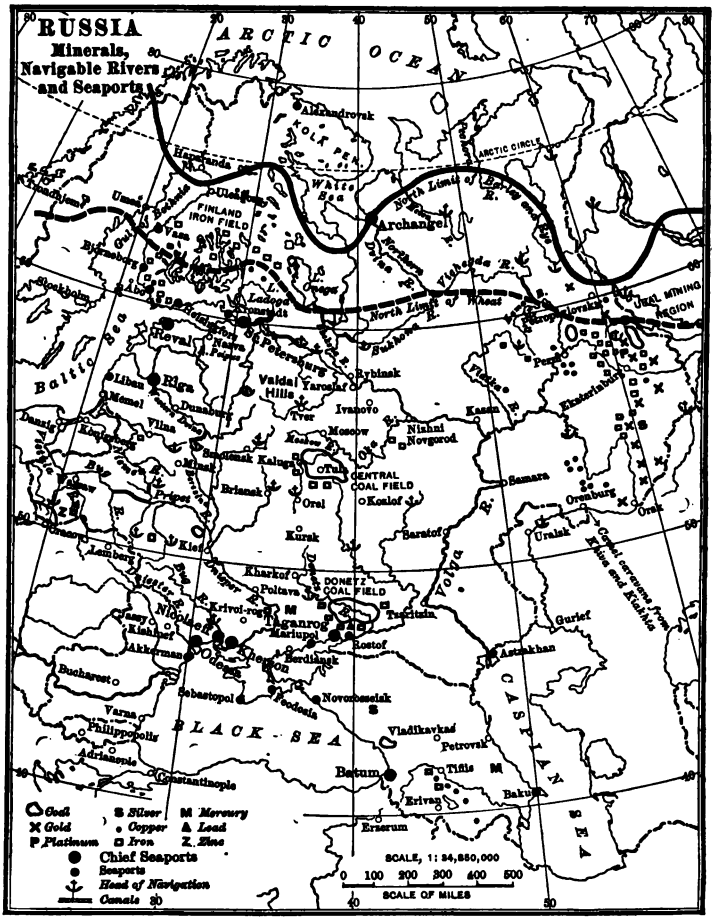


FIG. 121.—The rivers, navigable almost to their sources and easily connected by canals, provide continuous highways from the Baltic to the Caspian Seas. They carry enormous commerce, and are the chief and cheapest means of communication. The Russian rivers have natural disadvantages: they are closed by ice in the long winters; all except the arctic tributaries terminate in inland seas; deficient rainfall impedes navigation in some southern rivers, most notably the Don.

coal. Iron smelting must always be inferior as long as charcoal instead of coke is the fuel used. Still Russia supplies four-fifths of the pig iron used in her industries and makes nearly all her steel. Most of the blast-furnaces are in the Ural mining district and near the Donetz coal-field, and the metal is worked chiefly in south Russia. All the metals indicated in Fig. 121 are important in the trade and industries of the country. Russia supplies nearly all the world's platinum, which is specially valuable for chemical apparatus because it is not injured by acids.

Manufactures.—The Government is striving, with much success, to make Russia independent of the manufactures of foreign lands. It imposes a high tariff on foreign goods, and has a Department of Manufactures and Trade which has special charge of industrial interests. The result is, that large industries have been built up, the factory system has been introduced, and much modern machinery is used. The time was when even the Russian army was uniformed in British cloth, and most manufactures were brought from other lands; but to-day Russia makes all she needs of many kinds of goods. Her industrial system is embarrassed, however, by the fact that most of the people are farmers, and the methods employed are therefore quite different from those in our country.

Most Russian factory hands work on their farms in summer and spend their winters in the factories; or they toil during the winter in their village homes, as their fathers did before them, making many kinds of goods for the manufacturers who employ them. The 2,300,000 persons employed in the village and large factories make nearly everything that is needed except paper, glass, chinaware, and chemical products.

Moscow is the greatest industrial center; being the railroad center of Russia, it is most conveniently situated for receiving raw materials and distributing products. Observe in Fig. 121 the large industrial districts, those

around Moscow, St. Petersburg, Tula, and the region about Warsaw and Lodz being most important. The home cotton cloths exclude all except the very finest foreign fabrics; the importation of woolen goods is steadily falling off with the growth of woolen weaving; the silk industry centers at Moscow; linen manufacture is a house industry throughout the empire; in making ropes and cordage Russia is not surpassed by any other country; leather manufacture is a famous industry all over the country; Russia leather, tanned with birch-oil, is now made in other lands.

Metal products do not compete in quality with foreign countries; the result is that large amounts of machinery and other iron and steel goods are imported from Great Britain, Germany, the United States, and other nations. All the ports build ships; thousands of river boats for grain and timber are sold every year. Russian manufactures, generally speaking, are for home consumption and export by the land routes to Asia. The country can not compete with the great industrial nations for an important share of the international trade.

Fairs.—Great fairs (page 33) are still held in Russia at Nizhni-Novgorod, Kharkof, Poltava, and Kief; but the importance of these market-places is declining, because more railroads and cheaper travel make it easy for merchants to buy in many towns where goods are made and kept in large stock.

Transportation.—In the summer season many thousands of freight and passenger boats ply on the 46,000 miles of navigable waters which have been improved by deepening many rivers and connecting them with canals. Boats, for example, may travel by three routes between the Arctic Ocean and the Caspian Sea; by three routes between the Baltic and the Caspian; and by three routes between the Baltic and the Black Seas. More than three-fifths of all the river traffic is carried on the Volga and Neva (St. Petersburg) systems. The Government owns three-fifths of

all the railroads. The Trans-Siberian, which, with its western connections, joins the Atlantic with the Pacific, is the greatest railroad enterprise ever undertaken.

Seaports.—Fig. 121 shows the numerous seaports. It is to the commercial disadvantage of Russia that she controls no channel leading to the Atlantic except at Archangel and Alexandrovsk on the Arctic. The most important ports are on the Baltic and Black Seas. Nearly all the ports are blocked by ice in winter, but ice-breakers are lessening this obstruction. The Black Sea ports are the main outlet for the agricultural products of southern Russia; the Baltic ports command the foreign trade of the more densely peopled regions around St. Petersburg and the other flourishing Baltic cities. Odessa, a large manufacturing city, is the leading port; and the great trading and manufacturing center of St. Petersburg is second in importance. Since 1901 the transportation of freight between Russian and Siberian ports in other than Russian vessels has been prohibited.

Commerce.—Russia's trade relations with the countries east and west of it are very different. To the western countries it is an agricultural state, sending them its grain, flax, and hemp, and buying their manufactures; to the eastern countries it is a manufacturing state, buying their cotton and other raw materials and sending them its manufactures. Russia is thus a connecting link between Europe and Asia, though by far the larger part of its trade is with Europe. The exports, over $1,500,000 a day, are more than half cereals and flour. Flax and hemp fibers, forest products, linseed and grass-seed (oil grains), dairy produce, eggs, petroleum, and sugar are also important. The exports of manufactures are sent to Asiatic Russia, Asia Minor, and China.

The imports, over $1,000,000 a day, are largely materials for manufacture, such as cotton, wool, leather, metals, and chemicals; besides tea from China, machinery, coal, wine,

and textiles of the finer grades. The most business is done with Germany and Great Britain. Russia buys much of our machinery and a good deal of our cotton, though the cotton-mills are supplying themselves more and more with fiber from Russian Central Asia.

We buy very little from Russia. The reason is interesting, and it applies in the trade of many countries all over the world. When you look at the list of things Russia has to sell you will see that we produce them ourselves in very large quantities. For the same reason Russia's trade with her neighbors—Austria-Hungary and Rumania—is small; the products of the three countries being much the same, they do not need one another's goods.

Russia, with many times the population of Belgium, does not have so large a foreign trade as that little state. One reason, as we have seen, is that the country seldom needs to buy food, purchases no manufactures that it can produce itself, and makes few goods that other parts of the world need to buy. Another reason is because most of the people are very poor. It is with nations as with individuals—they can not buy much unless they have means with which to pay for much.

CHAPTER XXIV

ITALY, SPAIN, AND PORTUGAL

Italy.—The kingdom is more densely populated than any other large state of Europe. Manufactures and mining being much less important than in the great industrial states, agriculture, the fisheries, and commerce support most of the population. As the farms require irrigation, which is expensive, the land is mainly in the hands of large owners, who lease it in small parcels to the peasantry; rents are high, and the people get only a meager living from the soil. The masses are very poor, which accounts for the fact that 300,000 to 500,000 leave their native land every year for our country and South America, where they strive with great industry to better their fortunes.

Position and climate.—Italy is very favorably situated for commerce. Though the Alps, like a great wall, separate it from the northern lands, they are no barrier to its trade. When the Simplon Tunnel (Fig. 117) was completed, five lines of railroad connected Italy with the great nations of Europe. The kingdom offers the shortest route between those countries and the Orient; the profitable transit trade (page 200) is therefore a large source of revenue. As Italy has the sea on three sides, and is the center of the most important of inland seas, many of the people are sailors; the coasting trade is very large, and most of the important towns are seaports (Fig. 122).

The Po River is navigable from Turin to the Adriatic (Fig. 123), the Arno from Florence, and the Tiber from Rome; the many other streams have no importance for

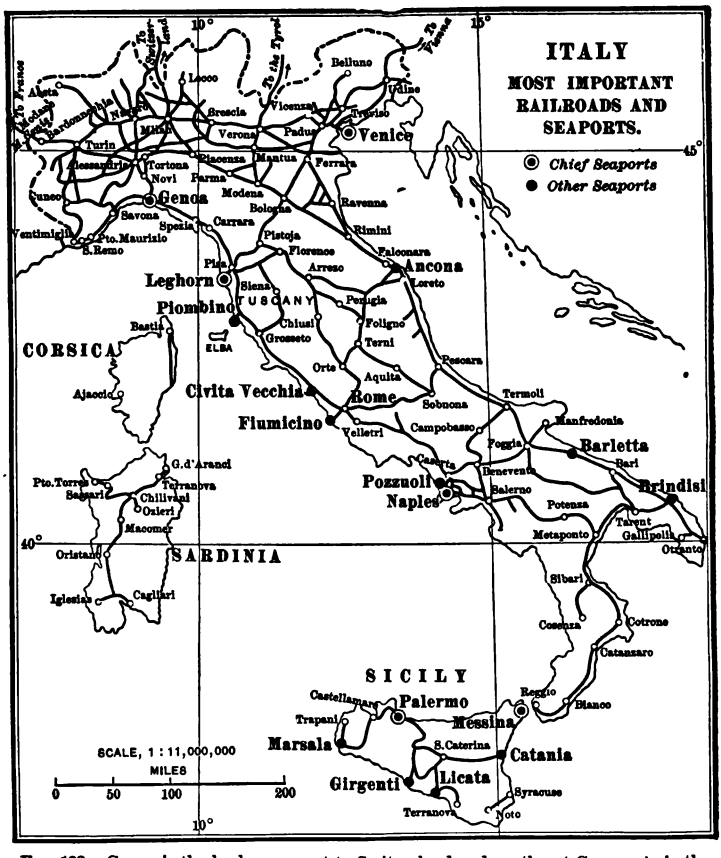


FIG. 122 —Genoa is the harbor nearest to Switzerland and southeast Germany *via* the St. Gotthard tunnel ; it therefore competes with Marseilles for northern trade ; it is also the natural outlet of the Lombardy industrial district. The opening of the Suez Canal (1870) and of the Mont Cenis tunnel (1871) made a new era for Genoa, which has the lion's share of Italy's sea trade. Leghorn, the port of Florence, suffers from proximity to Genoa ; the wines of the north and Carrara marble are among its shipments. Piombino receives the iron ore of Elba island. Most of the trade of Civita Vecchia, the port of Rome, is coal and pig iron for the interior. Naples, with 500,000 inhabitants, needs to import many articles for local consumption ; many vessels in the Genoa trade call at Naples. At Brindisi overland freight and passengers take the sea route for the Orient. Venice is the outlet for the east half of the Lombardy plain ; here grain is stored in air-tight pits to await shipment ; its trade is only about one-fifth that of Genoa. Palermo is the largest city and the chief port of Sicily. Messina commands the trade across the strait between Sicily and the mainland. Catania, Licata, and Porto Empedocle (the harbor of Girgenti, which has the largest sulphur mines in the world) export sulphur and citrus fruits. Marsala is a wine port for the famous vineyards around it.

Milan is the largest commercial and industrial center of the kingdom. Most of the roads across the Alps converge upon the city. Turin is on the route to France *via* the Mont Cenis tunnel, and has very large trading and manufacturing interests.

commerce, but much for irrigation. The continental part of the kingdom (north of Genoa) is dry, but the large development of irrigation canals fed by the Po and its tributaries makes the farmer almost independent of rain. The peninsula has abundant rainfall, but most of it in the winter months, so that irrigation is needed the rest of the year. The climate is genial, but large districts are very unhealthful, malarial fevers prevailing near the marshes of the lower Po, the swampy lands of the Maremma, the Campagna, and the Pontine marshes (Fig. 124).

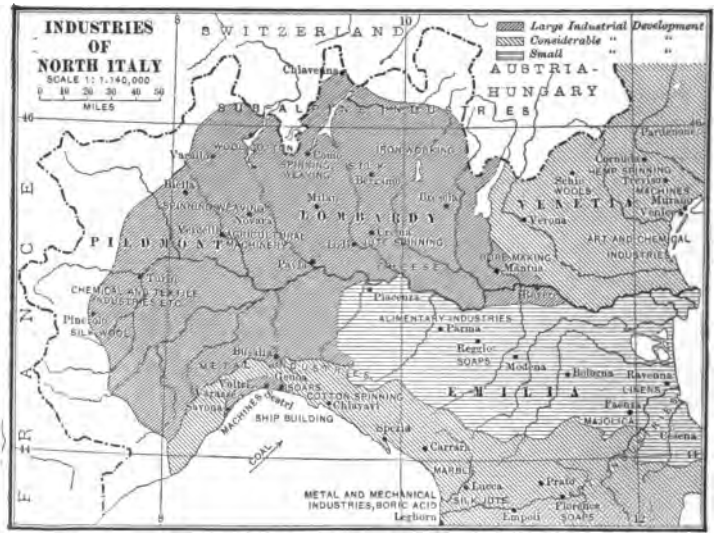


Fig. 123.

The Lombardy Plain.—The northern, continental part of the kingdom (most of it comprising the rich Lombardy Plain) must be distinguished from the peninsula. Its population is more dense, agriculture is more flourishing, the inhabitants are better educated and more prosperous, and most of the manufacturing industries are centered

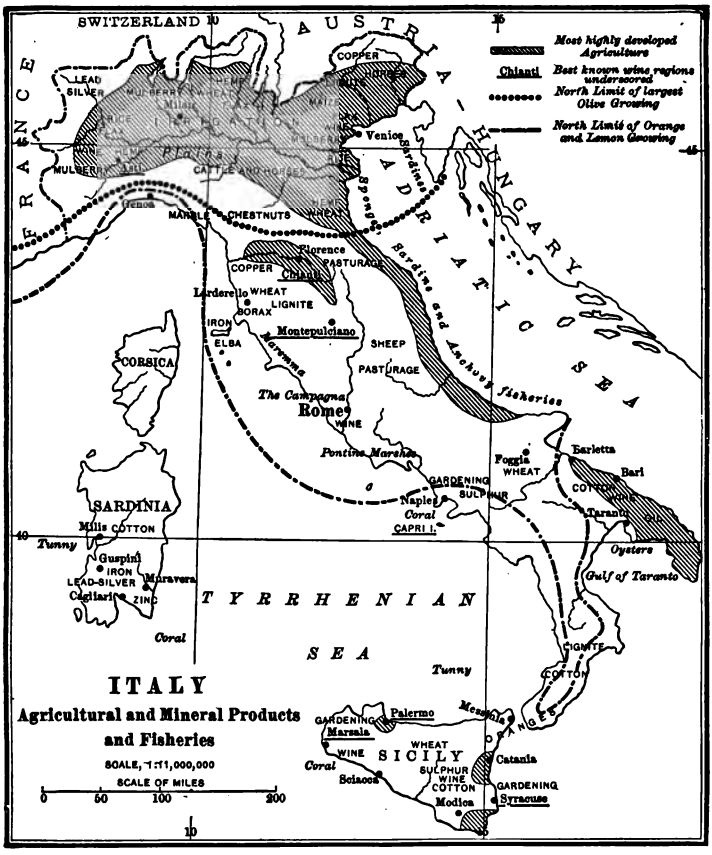


FIG. 124.

here. The north of Italy, therefore, is more important, commercially, than the rest of the kingdom (Fig. 123).

Vegetable products.—The north and the peninsula also differ greatly in their vegetable products. In the more temperate climate of the north the chief crops are rice and maize (with a surplus for export), wheat (falling below the home needs), flax, hemp (giving rise to the great cordage

industry), and the mulberry, which makes north Italy the greatest producer of raw silk outside of China and Japan (Fig. 54). Large crops of wheat and other cereals are also raised in the south, but they are less important than southern fruits. The south of Italy and Sicily are the favored home of oranges and lemons (citrus fruits), which are export crops. Olive-oil, one of the most important products of all Mediterranean lands, is surpassed in the foreign trade only by raw silk. The grape flourishes all over Italy (page 62), making the kingdom, next to France, the greatest wine producer and exporter. Fig. 124 shows the districts producing the wines that are most esteemed in the foreign trade. As the forests have been recklessly destroyed, much lumber and timber must be imported. The chestnut is the most important tree, as thousands of the peasantry live almost wholly on boiled chestnuts.

Animal products.—Domestic animals are less important than in any other country of Europe. The Italians eat very little meat, grains and vegetables being the mainstay of life. The home-bred horses do not suffice for the needs of the army. Mules and donkeys are much more important. The donkey as a beast of burden is conspicuous in the small farming of all Mediterranean lands (Fig. 125). Many cattle graze on the rich meadows of the Lombardy Plain, and some of the cheeses of that region are famous. The sheep supply only half of the wool

FIG. 125.—A DONKEY IN ITALY.
Carrying garden truck to market.

required by the woolen-mills. Thousands of goats among the mountains make goat- and kid-skins important exports.

The silkworm, reared all over the kingdom, but chiefly in the north, is the source of Italy's largest exports, European and American silk-mills deriving a great deal of their raw silk from the mulberry districts. Nearly 600,000 persons are engaged in silkworm culture.

About 100,000 men are employed all around the coasts in the fisheries, the nature of which is indicated in Fig. 124. They do not, however, supply the demand, and cod, herring, and other fish are imported. Observe the coral fisheries off Naples, Sicily, and Sardinia, one of the unique industries of Italy. The coral of commerce, also obtained off the north coast of Africa, ranges in price, according to color, from $1 to over $400 an ounce, the most expensive being the finest rose-pink in large pieces.

Mineral products.—Italy has no coal except lignite. Importing all her coal from Austria and England, the iron industry languishes in spite of the large supplies of ore that the islands of Elba and Sardinia afford. Lacking home fuel, Italy exports nearly all her metals, and depends upon other countries for all kinds of metal manufactures; considerable steel, however, made at Genoa and elsewhere, is turned into rails, machinery, and ships. South Italy and Sicily supply the world with most of the sulphur consumed in the arts (page 121). Over 100,000 tons of Carrara marble are quarried every year (Fig. 126).

Manufactures.—The manufacturing industries are embarrassed by lack of coal, capital, and continuous water-power. The streams that turn many wheels for some months are dry the rest of the year. But cheap labor and a very large population are not wanting and manufactures are growing, particularly in the north (Fig. 123). Silk weaving, the greatest industry, has its largest centers in Lombardy (Milan and Como), Piedmont, and Venetia, though it is carried on in most parts of the kingdom, Naples and

Palermo being conspicuous for their silk goods. Silk is the only textile that meets the home demand. The coarser cotton cloths, woolens, and linens are made in large quantities in the north, but the only exports are lace and some cotton goods to South America and Turkey. Venetian glass (beads, etc.) are prized in the world's markets, and Milan cutlery, straw goods, and coral jewelry are also in demand; but the world buys few other manufactures.

FIG. 126.—CARRARA MARBLE.
Carrying the marble blocks from the mines.

Commerce.—The railroad system (Fig. 122), the excellent highways, and the coasting vessels provide good facilities for domestic communications. The larger part of the shipping which enters the ports is Italian.

Most of the vessels in the foreign trade reach Italian ports heavy laden, but they depart with half cargoes or in

ballast. This fact throws much light upon the nature of Italian commerce. The things that Italy needs to buy are largely heavy and bulky commodities, such as grain (the largest import), coal, lumber, iron, steel, and machinery; besides wool, cotton, and general manufactures. Most of the things that Italy sells are very much lighter and less bulky in proportion to value, such as raw silk and silk goods (a third of the entire exports), olive-oil, wine, straw goods, coral manufactures; besides southern fruits, eggs, and sulphur. It is not surprising, therefore, that though vessels leave Italy lightly laden, the exports are worth nearly as much as the imports.

Every western country that manufactures silk is very prominent in Italy's export trade, their purchases, besides silk, including olive-oil, sulphur, wine, and southern fruits as the chief items. None except the silk-weaving nations buys much from the kingdom.

England leads in the imports, supplying a great deal of coal, iron, textiles, and machinery. Russia sends much wheat, and Germany manufactures. The United States sends cotton, tobacco, wheat, copper, and farm machinery to a larger value than that of the Italian export staples which we purchase.

Spain.—This kingdom, standing on a high plateau, enjoys the influences of a mild sea climate only where the Atlantic washes its northwest coast and along the Mediterranean. The interior is very cold in winter and hot in summer. As the rains along the Mediterranean usually fall after the growing season, and the rainfall in the interior is only 8 to 12 inches a year, there could be very little agriculture if it were not for extensive irrigation works. The surface of the plateau is cut up by mountain-ranges and deep valleys, so that it is difficult to build railroads; and good wagon roads scarcely exist. A large part of the peasantry can not read or write and are disinclined to labor. The natural and human conditions, therefore, are

not favorable to commerce. The Spanish Government is now endeavoring to improve these conditions as far as possible, so that the great resources of the country may have better development.

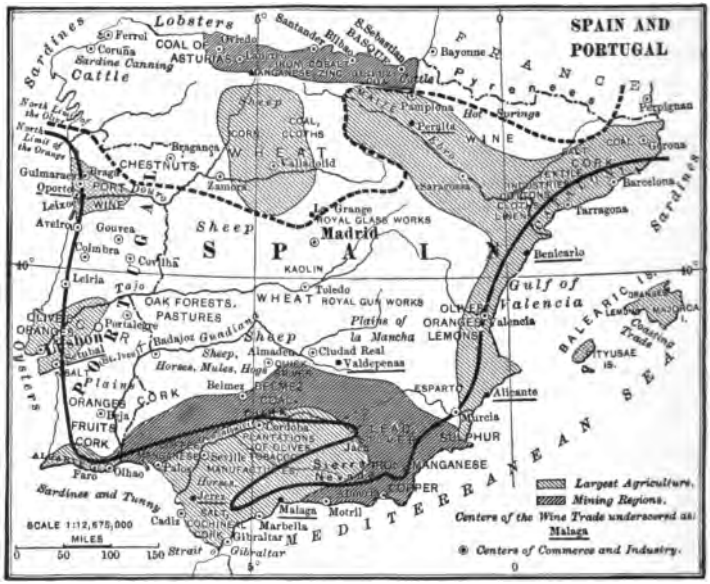


FIG. 127.

Vegetable products.—More than half the people live on the farms and supply over half the exports. They are hampered by the fact that the nobility and the Church own most of the lands; rent and taxes are very high, farm methods and implements are primitive, and the roads are so miserable that it is difficult to get produce to market. Irrigation has not been extended over much of the interior and vast regions are still uncultivated; the Government is now planning large irrigation works for portions of the dry table land. The best watered and cultivated area is along the Gulf of Valencia (Fig. 127), where three or four

crops are raised a year. The wheat and rye of the north are sometimes exported, but it is often necessary to import them; the rice and maize of the south are usually raised in export quantities.

Wine is the most important product and one of the large exports. Most vintages are poorly made, and sell at a pittance to the peasantry. Some of them, as the wines of Malaga and Alicante, and the sherry of Jerez, are famous and in large demand. Our country and England buy most of them.

Southern fruits stand high in export importance. Oranges and lemons are large crops, and the olive grows nearly everywhere (Fig. 127). Olives from Seville, for table use, are a large export; also olive-oil, though its quality is rather inferior. The cork-tree yields about 40,000 tons of cork a year (page 104).

Animal products.—Spain is poor in animals except sheep. Most of the cattle are raised on the moist pastures of the northwest, the only part of Spain where the dairying industry is of any importance. The wild animals used in the cruel national sport of bull-fighting are reared in the southern mountains. Horse-raising is neglected, but highly prized mules and donkeys are bred with great care, as these sure-footed animals are useful on the poor mountain paths. The sole riches of many of the mountain peasants are herds of goats, raised for their milk and skins. Sheep, feeding on the dry plains of the central plateau in summer, are driven to the milder regions of the south in winter. Coarse-wool breeds have largely replaced the famous fine-wool merinos that originated in Spain. The sea fisheries are important, but Norway sends large imports. No animal product is very important in the exports.

Mineral products.—Though Spain is richer in minerals than any other country of Europe, her people have done little to make them available. Observe in Fig. 127 the dis-

tribution of minerals among the northern and southern mountains. Foreign capital mines most of the metals. The rich iron ores of the north are sent chiefly to Germany and Great Britain to be turned into steel. British and German companies work the copper mines of the south, which are second in yield only to those of the United States. The Almaden quicksilver mines are the richest in the world. The Spaniards mine coal, but large quantities are imported from England even for railroads that run through the coal-fields. The Government reaps a large revenue by selling mining concessions to foreigners, otherwise the country benefits little by its mineral wealth. Spanish blast-furnaces produce only a small supply of iron.

Manufactures.—Barcelona and the surrounding regions are the largest center of manufactures; but the country does not supply its needs in any textile or metal branch or in paper and leather goods. Flour and olive-oil mills are numerous, and silver and gold wares, glass, china, and chocolate are important in Madrid and a few other cities.

Commerce.—Spain nearly pays for the manufactures—coal, cotton, tobacco, lumber, and food—she buys with the wine, minerals, olive-oil, and fruits that she sells. France commands a third of the foreign trade, England being the next largest buyer and seller. The trade with this country is very small; the total foreign commerce is only half that of Belgium, and a third that of the Netherlands. The most important ports are Barcelona and Cadiz for general commerce, Valencia for fruit exports, Malaga for grapes, wines, and lead and zinc ores, and Santander and Bilbao for iron-ore shipments.

Portugal.—The productions of this kingdom and the primitive methods of making them available are very much like those of Spain. Agriculture and the fisheries are the chief industries. Wine (one-third of the total foreign sales)

is the export staple. The best-known wine is port, which is made and shipped at Oporto. Cork, copper, fish, and southern fruits are also sold abroad. Colonial goods from the African and Asian colonies are the largest import excepting grain. The foreign trade is only one-fourth as large as that of Spain.

CHAPTER XXV

THE BALKAN STATES AND ASIATIC TURKEY

The Balkan peninsula.—This peninsula has been called a bridge between Asia and western Europe (Fig. 128). Two great trade routes, crossing this bridge, unite the eastern and western parts of the Old World. One of them is the Danube River, connected by the Ludwig Canal with the Main (tributary of the Rhine), and thus affording an unbroken waterway between the North and Black Seas. The other is the railroad system centering at Constantinople, with branches leading to ports on the Black and Ægean Seas, all converging at Belgrade or Budapest, and connected with all the commercial centers of the west. The Balkan states, now freed from the blighting rule of Turkey, are slowly advancing in education and prosperity; but the people are still very poor and their methods of work and business are primitive. Should you think that under such conditions the foreign trade would be very large?

Rumania.—The rich, warm soil of the wide plain, sloping to the Danube, which forms the larger part of this kingdom, makes it one of the three great granaries of Europe. Three-fourths of the people are farmers, their grainfields covering two-thirds of the plowed area. The chief crop is maize, the staple food of the country. The great export crop, sent in large quantities to western Europe, is wheat. Rice, barley, oats, rye, tobacco, and wine are also raised in excess of the home demand; thus practically all the agricultural crops are export commodities, of which grain makes three-fourths of the shipments. Stock-raising

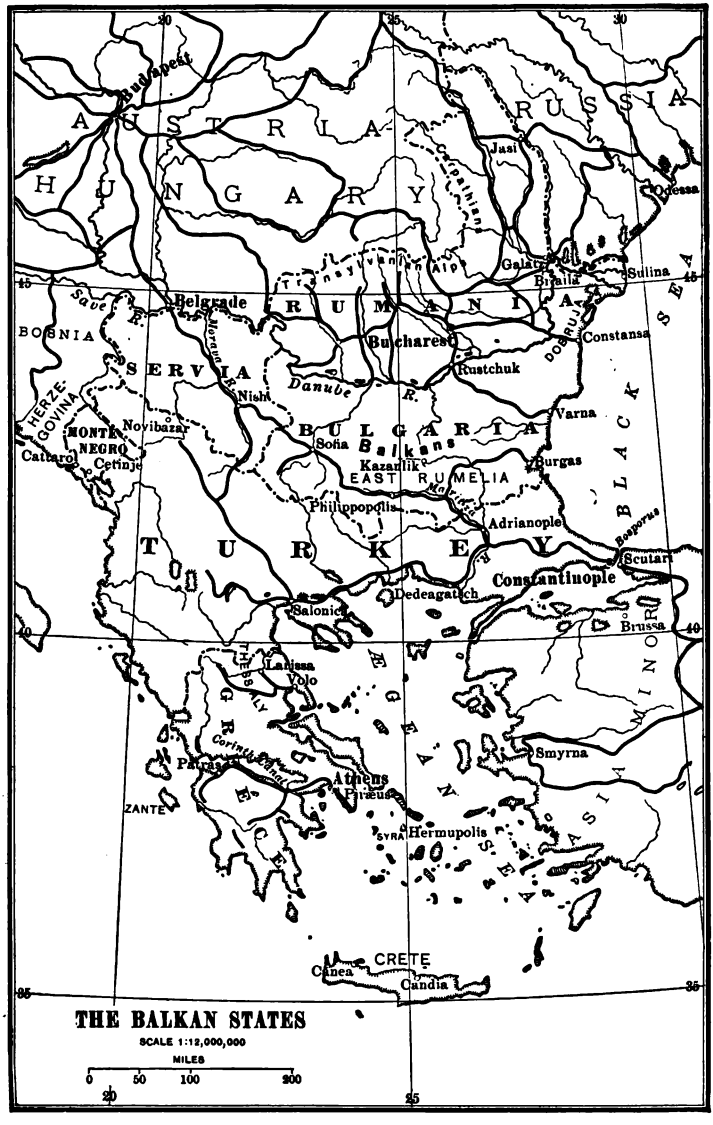

THE BALKAN STATES
SCALE 1:12,000,000
MILES
0 50 100 200
AUSTRIA
HUNGARY
RUSSIA
RUMANIA
SERVIA
BULGARIA
EAST RUMELIA
TURKEY
GREECE
BOSNIA
HERZEGOVINA
MONTENEGRO
CRETE
Budapest
Jasi
Odessa
Galatz
Braila
Sulina
Belgrade
Bucharest
Constansa
Rustchuk
Nishi
Novibazar
Cattaro
Cetinje
Sofia
Kazanlik
Varna
Burgas
Philippopolis
Adrianople
Scutari
Constantinople
Dedeagatch
Salonica
Brussa
Larissa
Volo
Smyrna
Patras
Athens
Piræus
ZANTE
SYRA
Hermupolis
Canea
Candia
Danube R.
Save R.
Morava R.
Maritza R.
Bosporus
Dardanelles
Corinth Canal
Thessaly
Transylvanian Alps
Carpathians
BLACK SEA
ASIA MINOR
AEGEAN SEA
30
35
40
45

FIG. 128.

is very large in proportion to the population, but is not yet important in the foreign trade. While the mineral resources are large they are not utilized, except rock-salt and petroleum.

Owing to lack of coal, capital, and skilled labor, no large industries have been established. There are many flour- and saw-mills, and coarse goods are manufactured in small shops or in the homes, but the finer manufactures are imported. Railroads connect all the principal towns with Bucharest, the capital, which has rail communications with Austria and Russia; but the Danube is the main outlet for the grain which is collected at Galatz for shipment. The imports, mainly textiles, metal wares, and colonial goods, are brought in both by sea and rail, Austria-Hungary, Germany, and Great Britain being the chief sources of supply. Most of the Balkan states buy more commodities from Austria-Hungary than from any other country.

Servia.—The Servians, in close touch with Austria-Hungary, are better educated than any other Balkan peoples. Servia is a part of the mountainous western half of the peninsula, which slopes to plains and lowlands in the eastern half. Large crops of maize and wheat grow in the fertile valleys, yielding a considerable surplus for export. Great numbers of hogs fatten in every valley on acorns and beechnuts, hog products being the chief exports of the kingdom. Belgrade, the capital, splendidly situated for trade between Vienna and Budapest on one side and Constantinople and Salonica on the other, is the center of business and of the cotton, silk, carpet, and other industries. The manufactures, however, are primitive, the country depending upon foreign sources for most of its metal, textile and other supplies of manufactured goods except those that are made in the homes. Servia's commerce has long been controlled by Austria-Hungary, which buys five-sixths of the hogs, cattle, grain, dried plums, and skins, and supplies five-eighths of

the manufactures. Germany and Great Britain have most of the remaining trade.

Montenegro, Herzegovina, and Bosnia.—The principality of Montenegro (Black Mountain) has no railroads or manufactures and little agriculture. Nearly everything is imported except food. Live stock and their products are the only exports. The small trade is with Austria-Hungary and Great Britain. Bosnia and Herzegovina, dependencies of Austria-Hungary, have greatly improved their condition since they were freed from Turkish rule. The trade is with Austria-Hungary, the leading exports being oak timber, plums, and cattle.

Bulgaria.—In Bulgaria and Rumania the peasant farmers are now the owners of their land—an encouraging fact that is helping the development of their countries. The fertile plains of the southern half of Bulgaria make it more prosperous than the mountainous northern portion of the principality. On these plains are wide areas of maize, wheat, tobacco, fruits, and wine; here also is the famous Valley of Roses (around Kazanlik), where attar is distilled from the petals of the damask rose—1,000 pounds of leaves making a pound of oil—from which rose-water and other delicate perfumes are derived; the valley is the largest source of supply, though the oil is produced in Turkey, Persia, and other Eastern countries. Leather goods and woolen textiles and carpets are notable, though most of the manufactures are coarse in quality and are consumed wholly at home. Both the Danube and the railroad system are utilized in the foreign trade—grain, cattle, hides, and perfumeries, the leading exports, going to England, Turkey, Germany, France, and Belgium; the imports, mainly textiles, yarn, metal wares, and colonial goods come from the same countries.

Greece.—This kingdom lacks many of the resources needed to make it a prosperous country. It has no coal, wood, water-power, or capital to develop large enterprises.

The many excellent harbors foster the seafaring spirit, and much of the commerce of the eastern Mediterranean is carried by Greek sailors. The rainfall being chiefly in winter, prevents large agriculture, and the poor mule tracks and few railroads are very inadequate as internal trade routes. Traffic is mainly by coasting vessels; that important improvement, the Corinth Canal (Fig. 129), is a great convenience in the commerce of the country.

Grain, currants, the vine, and olives are the staples of agriculture. The plains of Thessaly and others raise fine crops of grain, but two-thirds of the wheat consumed is imported from Russia, Rumania, and Turkey. Most of the animals are sheep and goats, and so butter is a large import. The silk, grown in the south, is sent to France for manufacture. Most of the textiles and common things the peasantry use are supplied by the house industries and a few mills, but the better manufactures are imported. Athens is the industrial and commercial center. Piræus is the chief port, and Patras is the port for currant shipments, which are half the exports. This fruit is not the currant we have in our gardens, but a small dried grape used in cakes and puddings. We buy many of them. Wine, olives, tobacco, sponges, and lead and zinc ores are also important exports. Grain, timber, textiles, metals, coal, colonial goods, and general manufactures are the leading imports. The total foreign trade of Greece in a year is about equal to six days of our foreign trade.

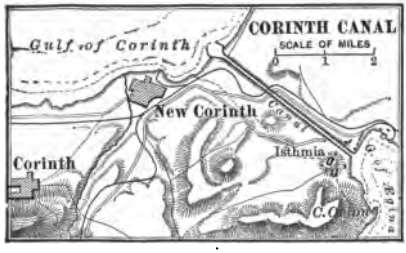


FIG. 129.—The Isthmus of Corinth Canal, 3.7 miles long, connects the Ionian and Ægean Seas, and gives a much smoother and shorter passage from Italy to Odessa than that around the south end of Greece.

European Turkey.—Turkey shows how bad government may stifle industry and enterprise and keep millions of people poor. Ruinous taxation absorbs one-third of the crops; the roads are miserable, the standard of civilization is low. The result is that though the soil is fertile, and the people depend upon agriculture, there are more weeds than grass or grain on the rich plains of Turkey. Manufactures are in the same backward condition. Turkey was once famous for certain kinds of silks, leather, and carpets, but it competes no longer with western manufactures, which it buys in large quantities. Even most of the fezes worn by the men are made in Austria and other countries. The home industries supply many articles made by expensive and antiquated processes, and there are a few silk and other factories. The results of the great war probably will introduce a brighter future.

The Turks have not developed the commercial spirit, and their trade is chiefly in the hands of Armenians, Greek and Spanish Jews, and a few merchants from north Europe.

The importance of Turkey in the foreign trade is as a market for textiles, sugar, coffee, coal, petroleum, iron, luxuries, and other wares, which the Turks buy in large quantities, mainly from north Europe, but also to some extent from the United States. These purchases are partly paid for with the grain, fruits, raw silk, perfumery, hides, and other articles that Turkey sells abroad. Constantinople has a magnificent harbor, and in other hands would become one of the greatest ports of the world.

Asiatic Turkey.—This vast region is growing in importance with the extension of railroads. Smyrna, the most important city of Asia Minor, is, next to Constantinople, the leading port of the Levant. The rich soil and other advantages of Asia Minor fit it for large development, but under the Turkish *régime* it is less productive than in the days of ancient Greece. Grain is a large crop. The chief exports of Asiatic Turkey, including Syria and Palestine,

are cotton, opium, meerschaum (for pipes), rugs, carpets, and shawls from Smyrna, cereals, dates, and many articles of lesser importance. Hodeida, on the Red Sea, exports the famous Mocha coffee. The imports are general European manufactures. Nearly all the foreign trade is in the hands of European and a few American merchants.

The fact that communications in the Balkan States are greatly impeded by the wide-spread mountains and by rivers too shallow for navigation has helped to isolate the various peoples from one another and to increase their mutual distrust. This has promoted ignorance, political unrest and war among them, so that the people in most of the states have made little development or progress. Well-to-do folk among them have been afraid to invest the capital required for any extensive mining development. Rumania, alone, has greatly thrived. It was a fairly rich and prosperous land when the late war overwhelmed the country with misfortune. In all the other Balkan states there is also much diversity of race, religious creed and business interests; and they have, furthermore, been kept in a state of unrest by the uncertainty as to their future owing to the political dissensions of the European powers.

CHAPTER XXVI

MEXICO AND CENTRAL AMERICA

Mexico.—The republic of Mexico rises steeply from the marshy coasts to a high table-land (plateau) walled in by mountains. The hot coasts grow cotton, henequen, mahogany, and other tropical products. Above the hot regions, in "the temperate lands," maize, beans, and other food-plants and tobacco flourish. On the surface of the plateau, over 6,000 feet above the sea, are wide pasture-lands, fields of wheat and barley, apple orchards, and, in the deep valleys, cotton and other crops of the warmer regions. Most of the people live on the plateau, the central region of agriculture, stock-raising, and mining. As the mountain ranges ward off the moist winds, the rainfall is small, so that most agriculture is carried on by means of irrigation. The rivers are of no importance for navigation, commerce depending mainly upon the railroads.

Agriculture.—Large areas of good farm-lands are not yet under cultivation because the needed water from the mountains has not been brought to them. Agriculture is mainly important in the domestic trade, most of the products being consumed at home (Fig. 130). As in many of the Latin-American countries, maize and black beans (frijole) are the staple food of the people, and maize is also largely grown for horse feed. The home mills spin and weave all the cotton; the finest of vanilla is exported, and tobacco, coffee, rubber, cacao, oranges, and lemons are coming gradually into the world's trade; but the great article of agricultural export is henequen (sisal fiber), used for sacking,

cordage, and binder's twine (page 94). It comes from some species of the agave (the American aloe); the enormous exports to the United States are making Yucatan one of the most prosperous states of Mexico. Another species of the agave yields a juice from which pulque, the national beverage, is manufactured.

FIG. 130.—Agriculture in Mexico.

Mexico sells a great deal of mahogany, dyewoods, and other tropical timber to foreign countries; but as many of the mountains have been denuded of their trees to supply timber for the mines, the country imports much lumber, mainly from our Pacific coast.

Animals.—Many large cattle ranches are scattered over the northern and central parts of the country, and the export of hides and live cattle to the United States is important. The ranch owners are improving their long-horned cattle by the importation of our best beef animals. Milk and butter sell at high prices, and dairying is there-

fore profitable near the towns. Millions of coarse-wool sheep are raised, but the home mills import much wool of finer grades. As in our country, the more prosperous Mexicans usually wear imported woolen cloths. The coast waters teem with fish, and there are beds of pearl-oysters in the Gulf of California that yield pearls and pearl shell (mother-of-pearl); but far larger supplies of these valued products are obtained from the Bahrein Islands in the Persian Gulf, and along some of the coasts of Australia, Ceylon, the Sulu Archipelago (Philippines), and Venezuela. Some pearl-oysters are taken from a depth of 120 feet with the aid of the diving dress, but most of them are gathered from depths of 40 to 50 feet.

Minerals.—Mexico is one of the richest mining countries in the world, and metals are its largest resource. Ob-

FIG. 131.—Mining in Mexico.

serve the distribution of the mines in Fig. 131. The country produces nearly as much silver as the United States, and they mine together more than half of the world's sup-

ply. Most of the gold is mined nearer the Pacific coast, but it is far inferior to silver in the quantity produced. The great resources of iron and coal are still scarcely utilized. As the larger part of the total exports are the precious metals, chiefly silver, many vessels coming to Mexico laden with bulky merchandise have to leave with light cargoes; many steamers with Mexican silver, gold, and lead in their holds put into United States ports to complete their cargoes.

Manufactures.—Though Mexico, like all the Latin-American countries, is poor in manufacturing industries, the progress of our neighbor in these enterprises in the past few years has been important. It is worth remembering that Mexico, Argentina, and Chile have forged ahead of all their sister republics in manufactures. In Mexico, especially, the home products are increasing, and the importation of manufactured goods is decreasing. More than 100 cotton-mills spin and weave all the home supply and import much cotton from Texas. Most of the cotton cloths used in the country are made at home. Over twenty woolen-mills make coarse fabrics. The country manufactures and refines its own cane-sugar. A number of other industries are important. Foreign manufactures, however, are still most prominent in the trade, and the country is specially dependent upon other lands for metal wares and machinery.

Railroads.—Fig. 132 shows that our railroads are now connected with the Mexican system at several places, so that the City of Mexico may easily be reached from all parts of our country. This will be an advantage only when law and order supplant robbery and other crimes that stifle commerce. The Mexican roads reach all the leading towns and the commercial and mining centers, with the capital city, the center of the wholesale trade, as the focal point of the system. German merchants and bankers are prominent in the large business interests of the capital.

FIG. 132.—Tampico accommodates steamers drawing 24 feet; as it is a railroad center, much of the foreign trade, particularly imports, passes through the city. Vera Cruz has the finest artificial harbor in North America; most exports are shipped from this port, which has regular connections with New York, New Orleans, Havana, and St. Nazaire, France. Progreso is the port of the industrial and trading town of Merida; most of the henequen of Yucatan is shipped from Sisal, northwest of Merida. On the Pacific coast, Guaymas, a thriving town with a good harbor, connected by rail with the Southern Pacific Railroad, exports metals and hides and imports mining supplies. Mazatlan, with a shallow harbor and no protection against the west wind, exports metals and wood and imports manufactures. San Blas, with a fair harbor, is the busiest port between Mazatlan and Acapulco. Manzanillo is the port of the coffee, sugar, and cotton plantations on the plains of Colima. Acapulco, one of the finest harbors in the world, a coaling point for steamers, has as yet but little trade. Much of the commerce between Mexico and the United States passes through the railroad towns on the northern frontier, mainly Ciudad Juarez and Ciudad Porfirio Diaz.

Commerce.—Before Spain was driven out of Mexico, about ninety years ago, the commerce of that rich region was closed to all the world except Spain. Her trade with the world at large has developed slowly amid political revolutions and other difficulties; and not until a wise and stable government ushers in an era of peace and progress will Mexico have an opportunity at last to develop her railroad

system and build up manufactures. The country is only just beginning to reach the condition that will enable her to attain large prosperity. She still has many needs, and among them, more railroads and the improvement of her common roads, which are very poor; domestic trade is hampered by the lack of good highways.

The metals, raw materials, and tropical products which the country sells to the rest of the world more than pay for the manufactures purchased abroad. Producing all her own food except some fish, oil, wine, and flour, Mexico uses her metals to buy many foreign goods, and has a large surplus to put in her pocket; thus home capital is accumulating for fresh enterprises that will provide more labor for the people and increase prosperity. The United States naturally is Mexico's largest source of supplies. Half of the imports are purchased from us, England, France, and Germany supplying most of the remainder. We buy two-thirds or more of the exports. Capitalists in our country are largely interested in Mexican mining and other enterprises.

Central America.—The Central American republics had one commercial disadvantage which was remedied when the Panama Canal was built and railroads joined the oceans. Most of the people live near the Pacific, and most of the development fronts on that ocean. This was an impediment to trade, because the great commercial nations, all of which share in their products, front on the Atlantic. Now rail routes have solved the problem.

Natural causes account for the fact that the west ports have the larger trade, and that much of the Atlantic slope is wild and unoccupied (Fig. 133). The moist trade-winds bring an enormous rainfall to the hot lowlands of the east, rain and heat combining to produce dense virgin forests, too unhealthful to be the home of white men and valuable only for their tropical forest products. In the west, on the other hand, mountain-ranges, with high plains among them,

rise above the steaming lowlands; the air is cooler, the rainfall is less; the Pacific coast also has a comparatively moderate rainfall; the conditions in the west therefore favor civilization. So it happens that, in the main though not entirely, the planting and other industries of Central America are scattered along the Pacific coast and on the plateaus among the western mountains.

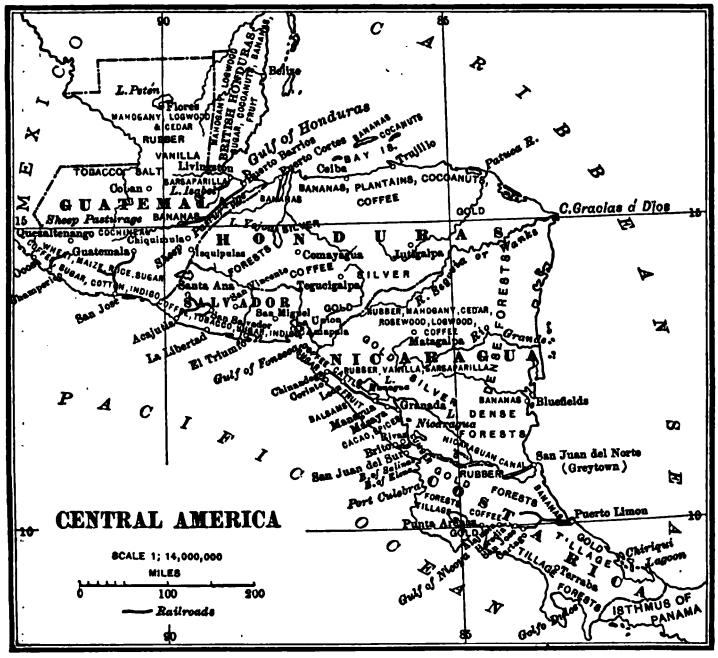


FIG. 133.

As the water-divide is near the Pacific, the Atlantic rivers have a longer and gentler course, and some of them, like the San Juan and Bluefields of Nicaragua, are navigable far inland. Railroads have been built from some of the ports to the uplands, where coffee is grown; but the common roads are very poor; and the earthquakes that

sometimes inflict great damage, the poverty of the people, the small development of manufacturing, and the frequent political disturbances, are other commercial disadvantages.

The republics compared.—Guatemala is the most populous and prosperous of the republics. It sells more to foreign lands (chiefly coffee) and buys more from them than any other state. Honduras and Nicaragua have least development. Both countries are large, compared with the others, but the population is sparse, and in Honduras particularly, labor is so scarce that about half the land fit for tillage or stock-raising is still a virgin waste. Nicaragua has the greatest extent of tropical forests, and civilization does not extend more than 100 miles inland from the Pacific. Salvador is the smallest country in America. Fronting wholly on the Pacific, practically all of it is available for settlement, and it is therefore more densely populated than any of the other republics. It has two products distinguishing it from the other countries—balsam of Peru, so-called because the Spaniards used to carry it to Peru for shipment to Spain, valued in medicine; and indigo, formerly the largest export, but now surpassed by coffee. Costa Rica is most noted for the distinctive excellence of its coffee, a large part of the crop being bought by the agents of foreign firms several months before it is harvested.

Seaports.—Guatemala is more favored than the other republics, with Atlantic ports accessible to the agricultural regions, a great deal of the coffee passing out through Livingston and Puerto Barrios as well as through the Pacific ports of San José and Champerico (roadsteads). Amapala, the Pacific port of Honduras, is one of the best natural harbors on the Pacific coast of America, and being near the mines in that republic, metals are among its largest exports. The little Atlantic ports of Trujillo, Ceiba, and Puerto Cortez are mainly important for the export of bananas, hides, and tropical timber to the United States. Mahogany and hides are carried by mules, many days'

journey to these ports. Most of the trade of Salvador is through the ports of La Libertad and Acajutla. Greytown and Bluefields are the Atlantic ports of Nicaragua, but Greytown is not accessible to large vessels. Banana shipments to our country are the main export of Bluefields, the crop being gathered from the plantations along the river for a considerable distance inland. Most of the Pacific trade passes through Corinto, which is connected by rail with the large interior towns and plantations. Puerto Limon, the Atlantic port of Costa Rica, has the advantage of being connected by rail with the great coffee district near the Pacific. The Pacific port, Punta Arenas, is thus diminished in importance. Observe the position of these ports on the map.

FIG. 134.—Banana plant and fruit.

Products.—Coffee is the great product of Central America. When the berry is ripe in December, all the men, women, and children available pick the crop. The berries are washed, then dried in the sun and taken to the factories, where they are prepared by modern machinery for market. Coffee is grown mostly on large plantations owned by well-to-do

planters; England, Germany, and France buy the greater part of the crop; our purchases are also important. A large part of our banana supply comes from Central America (Fig. 134); also many tropical woods (including cedar for cigar boxes), besides rubber, sugar, rice, tobacco, and indigo. Hides are shipped from all the republics; cattle chiefly from Guatemala. The rich mining resources are little developed, but Honduras exports some gold and silver, and Salvador sells silver.

Manufactures are still in their infancy, and are mainly confined to sugar, tobacco, and cotton goods in the towns and to the house industries which meet the demand for many cheap utensils and other articles. As all kinds of manufactured goods are needed, they are purchased in northwest Europe, and in this country with the products above mentioned, coffee far overshadowing all the other exports. The purchases from other lands are only about two-thirds as much as the exports of home products.

British Honduras, covered with forests, exports chiefly their products and tropical fruits.

Considerable commerce between the Atlantic and the Pacific is carried by rail across the Isthmus of Tehuantepec, Mexico. The government of Mexico bore the entire cost of building the road and the terminal facilities at Coatzacoalcos, on the Gulf coast and at Salina Cruz on the Pacific side. The route was opened in 1907. There are thus two short steam routes across America between the Atlantic and Pacific Oceans, the other being the Panama Canal.

CHAPTER XXVII

SOUTH AMERICA

Venezuela, the Guianas, Brazil, Argentina, Uruguay, Paraguay.

Venezuela.—This republic has hot and temperate lands, according to elevation (Fig. 135). In the northwest and northeast are the hot lowlands, producing a large amount of cacao. South of the lowlands are high mountain-ranges, in whose fairly healthful valleys most of the people live and most of the agriculture is centered. South of the mountains are the great plains or llanos, on which millions of cattle graze. South of the Orinoco are highlands with dense forests, a region of forest products, and considerable gold, the only mineral of importance exported.

A few short railroads among the mountains connect some of the towns with one another and the seaports. The principal seaports are La Guaira, the port of Caracas, the capital and main business center; Puerto Cabello, the port of a large region, of which Valencia is the business center; and Maracaibo, which the largest vessels can not reach. Steamship lines ply between these ports and the United States and Europe. The means of transportation south of the mountains are so poor that the cattle on the llanos are worth practically nothing except for hides and tallow. The Orinoco and its tributaries afford large navigation, but this region is little developed.

Caracas and Valencia are surrounded by the largest coffee districts. Coffee, grown under shade-trees to protect it from the sun, is the main staple of wealth and the great-

est export. Nine-tenths of the crop, averaging 55,000 tons, is shipped to Europe and the United States. Seven-eighths of the cacao, the second largest agricultural export, is sold abroad. Sugar importations are prohibited by law to protect the coarse brown sugar industry. Havana cigars are imported, as the home tobacco does not fill the demand. Many of the small, inferior cattle are driven to the mountain towns for beef; hides are a large export.

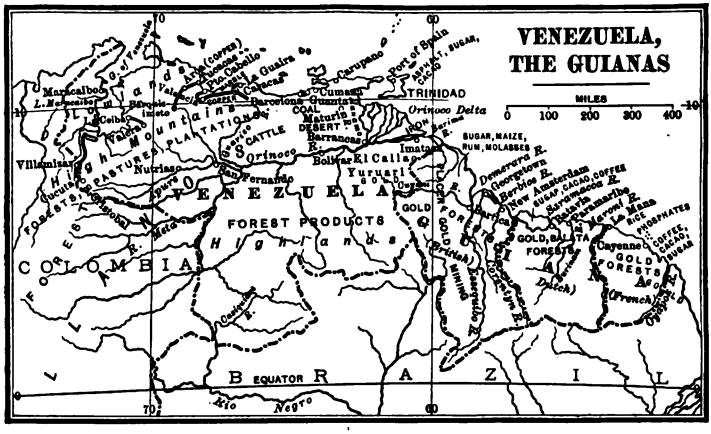


Fig. 135.

The manufactures serve only the most common needs, such as soap, matches, straw goods, and cheap hats and shoes. No manufactures of importance are exported.

Venezuela needs to import all her breadstuffs (chiefly wheat flour), cottons, woolens, kerosene, and many other articles of necessity or luxury. We send flour, lard, kerosene, hardware, and cotton textiles, all of which pay heavy duties in Venezuela, while Venezuelan coffee, cacao, and hides are admitted free into this country. The goods which Venezuela buys from us head the list in value, England coming next with cottons, woolens, and general manufactures, then Germany with cutlery and various wares,

followed by France with silks and fancy goods, and Spain and Cuba with wines and tobacco. The coffee, cacao, hides, and gold exported more than pay for the imports.

Venezuela most needs internal peace, good transportation, and large immigration to provide sufficient labor.

The Guianas.—The three Guianas (British, Dutch, and French, Fig. 135), are mainly devoted to the growing and manufacture of cane-sugar and its by-products, rum and molasses. Cultivation is confined almost wholly to a narrow coast strip, where most of the people live. Owing to the decline in the price of sugar the British and Dutch planters are replacing sugar-cane to some extent with coffee and cacao. An important amount of gold is mined in the interior, the British producing the larger part of it. Georgetown and New Amsterdam, the chief towns of British Guiana, owe their importance to the palmy days of the sugar trade. Great Britain and the United States take nearly all of the exports of this colony—sugar, gold, rum, rubber, rice, and molasses. Great Britain supplies half and the United States one-fourth of the manufactures, food, and coal imported. Paramaribo is the commercial center of Dutch Guiana, nearly all of whose trade is with the Netherlands. French Guiana (port, Cayenne) is less developed than the other colonies, and includes phosphates among its exports. Its trade is mainly confined to France.

Brazil.—This republic, nearly as large as the United States, lies wholly in the tropical and subtropical zones, except the extreme southern states, which enjoy a temperate climate (Fig. 136). It has two great products, in which it surpasses all the rest of the world. One is rubber, growing in the hot, low, forest plain of the Amazon basin, which covers the northern half of the country; the other is coffee, growing in the higher lands of the south, and particularly in the region around Rio de Janeiro and Santos. The far inland part of the highlands is dry and sparsely inhabited, grass taking the place of forests. Most of the

FIG. 136.—Rio de Janeiro, the largest city, has a fine harbor, and is the political, commercial, and industrial center. Santos is the largest coffee-shipping port. Porto Alegre is the port of the German colonies in South Brazil. Pernambuco, one of the finest harbors of the land, exports chiefly sugar and coffee. Para ships nearly all the rubber. As no railroads connect these ports, the coast traffic from one port to another is important.

The Amazon affords larger interior navigation than any other river system in the world. Ocean vessels ascend the river to Iquitos in Peru. Observe the confluence of waterways at Manaos, 1,000 miles up the Amazon, that have made it a large trading center. It is the depot for all the rubber collected in the upper valley. River steamers ply between Cuyaba in Matto Grosso and Buenos Aires.

people live in the coastal zone, a very fertile region, much of it covered with plantations. There are many good harbors, and all the most important towns are along the coast.

Yams, black beans, and rice supply the poorer classes with food; but though wheat thrives in the south, where swine and cattle are also fattened, a great deal of food (wheat, flour, pork, lard, and other things) is imported. The reason is because most Brazilian planters prefer to raise export crops that are in great demand, and particularly coffee. The attention paid to coffee, cotton, and sugar has made Brazil, to some extent, a food importer.

Coffee grows nearly everywhere along the coast as far north as the Amazon, but nearly the entire production is in the states of São Paulo (about 1,000,000,000 plants) and

FIG. 137.—Drying coffee in Brazil.

Rio de Janeiro. Here are the heavy soil and the dry weather in harvest-time that the berry requires. All the plantations, some of them embracing 50,000 acres, were formed by clearing away the forests. The berries are picked from May till September, sorted into seven grades, and shipped in sacks each containing 132 pounds. In good years the crop amounts to over 13,000,000 sacks.

Fig. 137 shows why dry weather is needed during the preparation of the crop for market. Brazilian coffee is particularly rich in caffeine, to which it owes its stimulating quality. About nine-tenths of it goes to the United States, Europe, South Africa, and the Plata River countries.

Observe in Fig. 136 the more northern regions of cotton-growing, much of which is consumed in the home mills, though thousands of tons go to Europe (page 86). Cane-sugar plantations extend for 1,800 miles along the coast, but the industry has declined with the fall in sugar prices.

Rubber is second only to coffee in the exports. The various rubber-trees, producing several qualities, are tapped, and the coagulated sap (crude rubber) is taken to collecting points on the river banks and carried by boats to Manaos, Para, and other markets. The quality known as Para brings a higher price than any other (page 103). Brazil-nuts, coming mostly from the Rio Negro, are among the other forest products.

The domestic animals are mainly in the south, but mules are nearly everywhere. About 500,000 cattle are slaughtered every year for home consumption (fresh beef, jerked beef, also an export); but many cattle and much jerked beef are imported from La Plata states. Wool is exported.

Brazil is very rich in minerals, but poor roads and scarcity of labor have prevented much development. A small supply of very fine diamonds comes from Minas Geraes. Would you expect that manufactures could have large development in this land where coal and iron are in small supply? Brazil buys an enormous quantity of manufactures. Still, some iron is smelted; protected by high duties, about 100 cotton-mills make coarse fabrics, and sawmills, brick-yards, tanneries, and workshops supply most of the primary necessities.

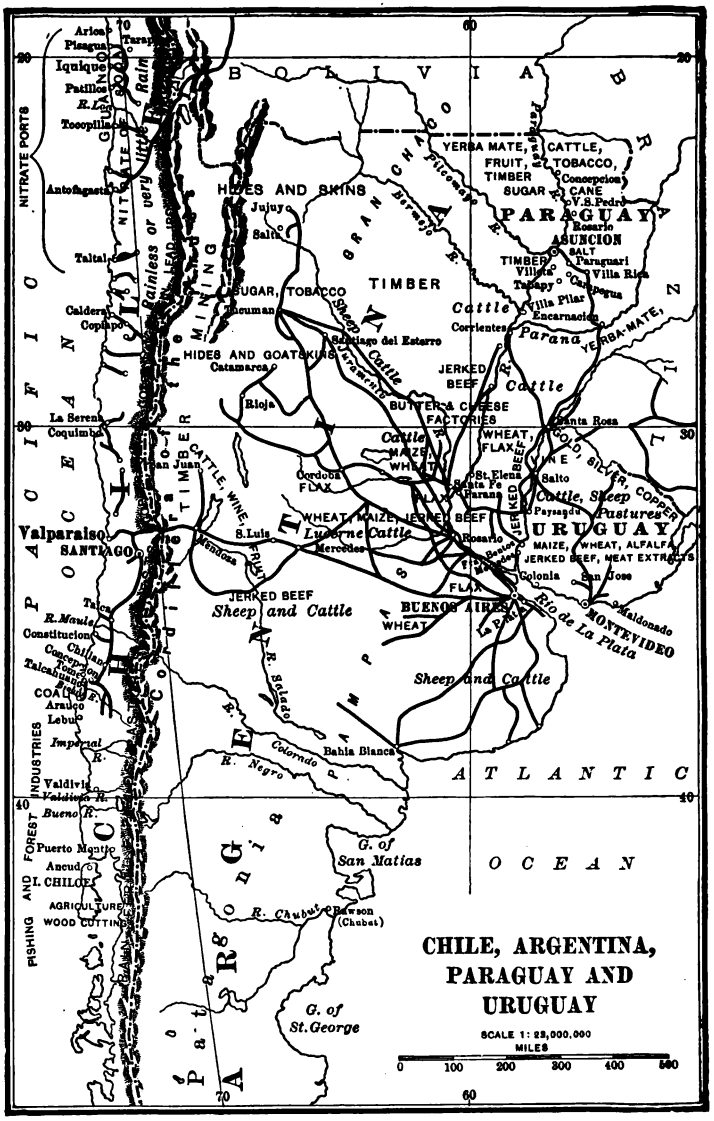
More than 30 foreign mail steamers visit the various

ports every month. Fifteen lines connect Brazil with Europe and North America. Coffee, rubber, tobacco, hides, and cacao lead the exports, which are somewhat larger than the imports. Most of the manufactures, coal, and articles of luxury come from Europe; most of the foodstuffs from the neighboring countries or the United States, we supplying many of the hog products, nearly half of the flour, and all of the kerosene.

Argentina.—This large republic, healthful, and most of it temperate in climate, is the leading Latin-American state. Observe in Fig. 138 the wide pampas, nearly level, treeless plains, covered with nutritious grasses. They extend westward almost to the Cordilleras, north to the forests of Gran Chaco, and south far into Patagonia. The pampas are Argentina's greatest source of wealth, for the 25,000,000 cattle and 89,000,000 sheep that feed on the rich grasses make the animal industries more important than any others.

Argentina grows more wool than we produce—more than any other part of the world except the Continent of Europe and Australasia. Buenos Aires, the largest city of South America, is a great wool port; when shearing-time comes there are scarcely cars enough to move the wool to that city. The crop is sent to Europe unwashed, and therefore it brings a lower price than the scoured, Australasian crop. France, Belgium, and Germany are the largest buyers, Great Britain buying more of the Australasian and Cape of Good Hope wools. Along with the great wool trade has grown up a large business in frozen meat. Twenty years ago establishments were erected at Buenos Aires for freezing mutton and beef, so that they might be carried across the tropics to Europe. About 200,000 dressed sheep are now exported every month. There was enormous waste before refrigeration was introduced, for meat was then thrown away, the animals being raised only for wool, hides, and tallow.

Frozen beef is a smaller branch of the industry, but


CHILE, ARGENTINA, PARAGUAY AND URUGUAY
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MILES
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BOLIVIA
PARAGUAY
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SANTIAGO
BUENOS AIRES
MONTEVIDEO
Rio de La Plata
Asuncion
Rosario
Cordoba
Mendoza
Tucuman
Salta
Jujuy
Iquique
Arica
Antofagasta
Coquimbo
Concepcion
Valdivia
Puerto Montt
Ancud
I. CHILOE
Bahia Blanca
G. of San Matias
G. of St. George
Rawson (Chubut)
R. Chubut
R. Negro
R. Colorado
R. Salado
R. Parana
R. Paraguay
R. Uruguay
R. Maule
R. Bueno
Imperial R.
Valdivia R.
Talca
Concepcion
Temuco
Lebu
Arauco
Constitucion
Chillan
Talcahuano
Tocopilla
Pisagua
Tarapaca
Taltal
Caldera
Copiapo
La Serena
San Juan
Catamarca
Rioja
S. Luis
Mercedes
Santiago del Estero
Corrientes
Encarnacion
Villa Pilar
Villa Rica
Villeta
Tacuapy
Paraguari
Concepcion
Pilcomayo R.
Bermejo R.
Santa Rosa
Salto
Colonia
San Jose
Maldonado
Paysandu
Parana
Rosario
Santa Fe
St. Elena
Cordoba
Tucuman
Salta
Jujuy
Catamarca
Rioja
Mendoza
S. Luis
Mercedes
Santiago del Estero
Corrientes
Encarnacion
Villa Pilar
Villa Rica
Villeta
Tacuapy
Paraguari
Concepcion
Asuncion
Rosario
Santa Rosa
Salto
Paysandu
Colonia
San Jose
Maldonado
Bahia Blanca
Rawson (Chubut)
Valdivia
Puerto Montt
Ancud
I. CHILOE
Talca
Concepcion
Temuco
Lebu
Arauco
Constitucion
Chillan
Talcahuano
Tocopilla
Pisagua
Arica
Iquique
Antofagasta
Taltal
Caldera
Copiapo
La Serena
Coquimbo
NITRATE PORTS
NITRATE OF SODA
Rainless or very little Rain
HIDES AND SKINS
SUGAR, TOBACCO
HIDES AND GOATSKINS
TIMBER
Cattle
Sheep
Cattle, Sheep
Pastures
YERBA MATE, CATTLE, FRUIT, TOBACCO, TIMBER
SUGAR CANE
JERKED BEEF
BUTTER & CHEESE FACTORIES
WHEAT, FLAX
MAIZE, WHEAT
WHEAT, MAIZE, JERKED BEEF
Lucerne Cattle
JERKED BEEF
Sheep and Cattle
WHEAT
FLAX
MAIZE, WHEAT, ALFALFA
JERKED BEEF, MEAT EXTRACTS
GOLD, SILVER, COPPER
CATTLE, WINE, FRUIT
YERBA-MATE
GRAN CHACO
INDUSTRIES
FORESTS
FISHING AND
AGRICULTURE
WOOD CUTTING
10
20
30
40
60
70

FIG. 138.

many live cattle are now sent to Europe in open pens on deck, as it is too hot across the tropics to keep them in closed pens. Both Argentina and Uruguay make great quantities of jerked beef for home consumption and export.

Observe in Fig. 138 the regions of wheat-raising. Argentina has become one of the greatest wheat-producing and exporting countries. Italian and German colonists raise most of the wheat, maize, and other farm crops. The cereals are large exports to Europe, the wheat, however, bringing a smaller price than ours because it is not so well graded and cleaned. Flax, grown in enormous quantities for the seed (linseed-oil) is, next to wheat, the largest farm export.

The rich mineral resources along the Cordilleras are mainly a harvest for the future. Argentina has no coal, and England sends her large quantities for railroad and manufacturing purposes.

Buenos Aires is the greatest manufacturing as well as commercial center. While most of the manufactures of the country relate to the preparation of meat, hides, and agricultural products, such as flour and sugar, there are also many textile mills that supply nearly all the common woolens and cottons. Structural iron, such as beams for buildings, is made, and leather goods, hats, paper, and beer are large products. Manufacturing industries are aided by a high protective duty on foreign goods.

While Buenos Aires controls two-thirds of the foreign trade, the smaller ocean steamers can ascend the La Plata to Rosario and load with wheat, meats, and hides for Europe. Buenos Aires is connected by steamships with many important ports of Europe and America. The flat pampas being very favorable for railroad building, roads have been extended in all directions from Buenos Aires. The map shows the great transcontinental line, completed in 1910, which at last connects Buenos Aires and Valparaiso.

The exports almost invariably exceed the imports. Animal products are half of the exports; wheat, maize, linseed,

and timber are also large shipments. The better grades of cotton goods and wool and silk fabrics are the largest imports, followed by iron for the foundries, coal, hardware, and miscellaneous manufactures. The United States sends a large amount of hardware, machinery, and other goods.

Should you think it easy for ships that carry our heavy freight to Argentina to get return cargoes? We do not want the wheat, maize, and meat that the country produces. Our tariff on wool is so high that we do not buy so much wool from Argentina as formerly. We have use for more hides than we produce, and Argentina has plenty to sell; so vessels take on hides and what general freight they can get, and often put into Brazil ports to make up a full cargo.

Uruguay.—This small republic depends upon its pastoral industries and agriculture. The soil is fertile, the rainfall abundant, and the grassy plain that covers most of the country makes grazing the largest industry. Every year about 800,000 cattle are killed with little waste—horns and bone-ash being exported and refuse turned into fertilizers. A large part of the cattle are used in making jerked beef (page 67); about 150,000 beeves are slaughtered annually at Fray Bentos for the manufacture of meat extracts. Sheep are more important than cattle in the foreign trade, the wool shipments being the largest exports. Most of the cereals and other farm products are consumed at home, but wheat is sent to England and flour to Brazil, that country buying a little more flour from Argentina and Uruguay than from the United States.

Much of the trade centering at the port of Montevideo is carried on Uruguay river-steamers, this important commercial center also being joined by rail with the chief towns of the interior. The exports of animal products, seven-eighths of the whole, are so large that the exports usually exceed the imports. Most of the manufactures are imported.

Paraguay.—This republic has rich resources in timber, farm- and grass-lands, but most of them are still dormant, because civil wars, sparsity of population, wretched interior communications, and lack of capital have prevented their development. The country has river but no rail connections with the sea; high freight rates on the river steamboats are a commercial disadvantage.

Paraguay produces a great deal of yerba maté, its largest export; being cheaper than tea, the use of maté as a beverage is constantly growing in South American countries (page 62). Hides are second in export importance; they are the only animal product sent out of the country except live cattle to the jerked-beef establishments of the south. Oranges, pineapples, and tobacco, sent to Argentina, are the only important exports of the orchards and fields. All the wheat comes from Argentina; but the poor, comprising most of the population, can not afford to eat it.

Cotton goods are the principal foreign purchases, as all the people dress in cottons. Wine and rice are next in order, the small imports, half of them coming from England, being paid for with maté, hides, timber, tobacco, and oranges.

CHAPTER XXVIII

SOUTH AMERICA—(*Continued*)

Colombia, Ecuador, Peru, Bolivia, Chile; also West Indies, Bermuda.

Colombia.—More than half of Colombia is uninhabited (Fig. 139). Most of the people live in the healthful mountain highlands, while the coast lowlands are hot and malarious. The volume of commerce is small in comparison with the natural wealth; trade is difficult from lack of good interior communications. The rivers are interrupted by rapids, though the Magdalena is navigable with difficulty for 600 miles. Much freight for the interior is specially packed for mule carriage on the narrow mountain paths. The Isthmus of Panama now forms the Republic of Panama. Its railroad, owned by foreigners, is little more than a means of transport for the commerce (duty free) of other nations; and freight charges by rail are so high that the Isthmian route is used chiefly for the more costly kinds of freight.

Most farm products are raised for home consumption, agriculture yielding little but coffee and tobacco for export. It is cheaper to import flour for the coast towns than to carry the fine wheat of the mountain plains to the coast. Coffee, the staple export, is shipped by the Magdalena to Barranquilla, or eastward to Maracaibo, most of it going to Europe. Tobacco, grown in the interior, being very valuable in proportion to weight, can bear the cost of transportation, and thus is an export article; cacao, being raised near the sea, is easily sent to the ports. Thus the transportation facilities largely determine the character of the ex-

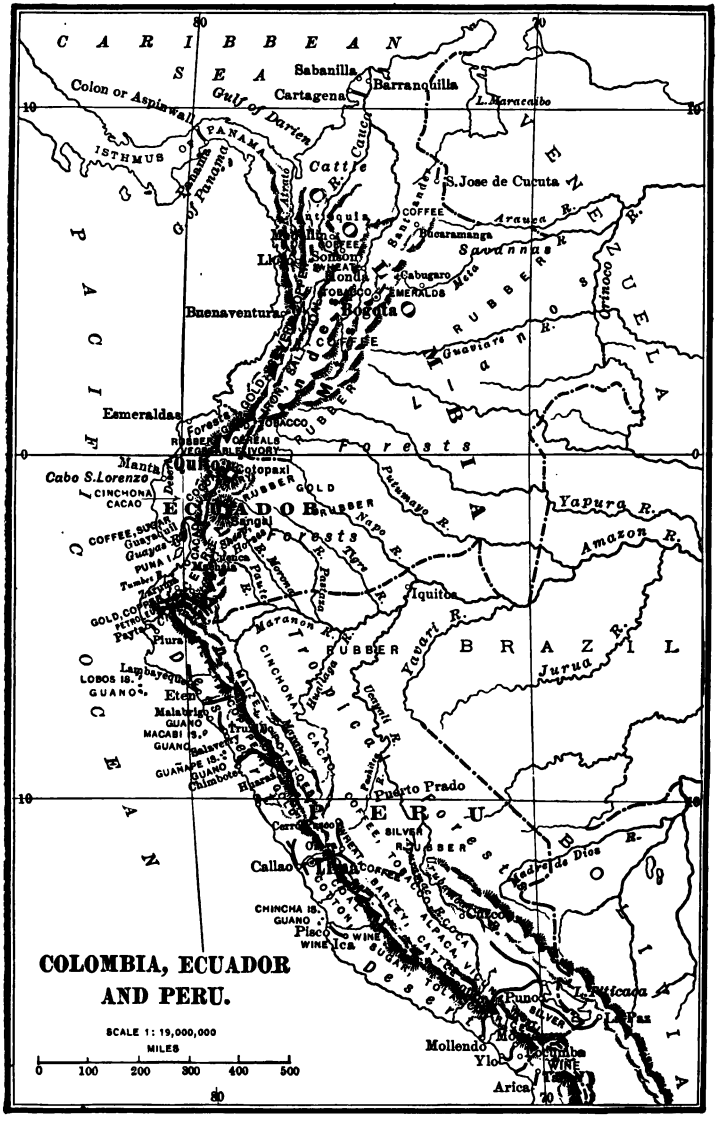
CARIBBEAN SEA
Colon or Aspinwall
Gulf of Darien
Sabanilla
Cartagena
Barranquilla
L. Maracaibo
ISTHMUS
PANAMA
Gulf of Panama
Cattle
S. Jose de Cucuta
COFFEE
Bucaramanga
Savannas
Medellin
Honda
Cabugaro
EMERALDS
Buenaventura
Bogota
COFFEE
Guaviare R.
Orinoco R.
Esmeraldas
Forests
Manta
Quito
Cotopaxi
Cabo S. Lorenzo
CINCHONA
CACAO
ECUADOR
GOLD
Napo R.
Putumayo R.
Yapura R.
Amazon R.
Iquitos
Tumbes
Zaruma
Piura
Lambayeque
LOBOS IS.
GUANO
Etepe
Malabrigo
GUANO
MACABI IS.
GUANO
GUAÑAPE IS.
GUANO
Chimbote
Huarez
Huanuco
Tarma
Cerro Pasco
Callao
Lima
CHINCHA IS.
GUANO
Pisco
WINE
Ica
Puerto Prado
PERU
RUBBER
Yavari R.
BRAZIL
Jurua
Madre de Dios R.
Cuzco
Lake Titicaca
Puno
Mollendo
Ylo
Arica
Tacna
WINE
Desert
Pacific Ocean
COLOMBIA, ECUADOR AND PERU.
SCALE 1: 19,000,000
MILES
0 100 200 300 400 500

FIG. 139.

ports. The llanos might easily become a great source of leather if there were good means of transport. Considerable silver and gold figure in the exports, because such valuable commodities can bear high transport charges.

Most of the manufactures are crude and made only for home use. Many foreign goods which Venezuela buys are not purchased by the people of Colombia, because it is so difficult to carry them into the interior. The United States buys about a fourth of the exports, and sells a fourth of the foodstuffs, textiles, and other things the country buys.

Ecuador.—The vegetable products of all latitudes grow in Ecuador (page 6). The country produces many commodities that the world buys, but few are sent to foreign markets. The roads are merely mule tracks. None of the wheat grown among the mountains was brought down to the coast towns after the completion of the railroad between Guayaquil and Quito.

The regions east and north of the Gulf of Guayaquil are the best tilled and most fertile districts (Fig. 139). Ecuador is a very large source of cacao (page 62), which is the principal wealth of the country. Most of it is exported (over three-fourths of the total exports), though considerable is consumed in the local chocolate factories. Hides are sent chiefly to the United States; there are no other animal exports of importance.

Panama hats, so called because they are forwarded to market through Panama, are made by coast Indians from the fine straw *toquilla*. The best hats bring high prices. The straw is carefully selected and divided into the required widths with the thumb-nail. The hats are plaited between midnight and 7 A. M., when the air is most humid. The work requires patience, fine sight, and special skill.

Guayaquil, the best harbor on the west coast of South America, handles nearly all the foreign trade of Ecuador. One-third of the exports go to France, that country and

Spain being the largest buyers of cacao. San Francisco and New York import large quantities of it both for chocolate and cocoa. The largest imports from Europe are cotton and woolen textiles, while we send flour, lard, kerosene, lumber, and machinery to the value of about one-fourth of the goods bought from foreign lands.

Peru.—While the east slopes of the Cordilleras, reached by the trade-winds, are well watered and fertile, the long strip between the mountains and the sea is a desert, relieved only by ribbons of verdure marking the irrigated farms and plantations in the river valleys; for the streams, fed by the melting snow of the Andes, flow west to the ocean, imparting life to their valleys, which are covered with sugar-cane, cotton- and tobacco-plantations (Fig. 139). Ages of aridity along this coast preserved the guano, for which European and American farmers have paid many millions of dollars. The supply of this fertilizer is now nearly exhausted. The barren heights of the Cordilleras have vast economic importance, both for the streams they send through the desert and for their large stores of mineral wealth. East of the mountains are dense forests rich in rubber and cinchona (page 104).

Sugar is usually the largest export. As there is no rain, grinding cane may be carried on nine months in the year. Five-sixths of the crop, produced at small cost, is exported, Great Britain, the United States, and Chile being the largest buyers. Cotton is grown in north Peru; metals, gums, and wool are also prominent. Breadstuffs are largely imported, as the cereals do not meet the demand. Coca-leaves, from which the powerful drug cocain is obtained, are sent to many countries. Cattle are bred for beef and hides, most of the latter being used in the home leather-work; we buy about one-fourth of the surplus hides. The silver- and copper-mines, some of them reached by the railroads, yield large exports.

In addition to the limited supply of home manufactures,

Peru requires large imports of cotton and woolen goods, iron wares, machinery, and groceries. Wheat is imported from Chile and the United States. We also sell to Peru lumber, railroad ties, machinery, and other articles. About half the exports of sugar, cotton, metals, and hides go to England. More than half of our large purchases are sugar, cotton, and goat-skins. Most of the foreign trade is through the port of Callao.

Bolivia.—Metals are the largest exports of Bolivia (Fig. 140). The country is a great producer of silver, tin, and copper. Deep valleys, some thousands of feet below the general level of the high plateau, permit the cultivation of foodstuffs, including fruits. Silver is the most abundant metal and the largest export. Tin associated with silver in many places is second in importance. Having no sea coast, Bolivia must send its exports through foreign lands. Many of the ores and metals are carried by mule- or llama-trains to railroads, whose freights are very high; and when the shipments reach the sea they are still thousands of miles from the markets. Few products less valuable than silver, tin, and copper could bear the high tax of such expensive transportation. Agricultural products supply only home needs. A large amount of general manufactures are imported, England and Germany having most of the trade.

Chile.—The northern half of Chile is practically a rainless desert (Fig. 138). The middle zone, between Santiago and Valdivia, is a region of cattle, wheat and fruit. This favored region sends food to the barren north, where thousands of men are working in the nitrate-fields and mining-camps. The excessive rainfall south of Valdivia is favorable to forest growth, and here lumbering and fishing are the chief occupations; thus climate has a great influence upon the movement of trade from one part of Chile to another.

The Chileans have paid much attention to education, and are among the most progressive of the South Ameri-

can peoples. Germans, English, and other foreigners prominent in business, mining, and railroad enterprises, are helping to develop the country.

The largest resource is nitrate of soda, obtained near the north coast (Fig. 138). It comprises three-fifths of

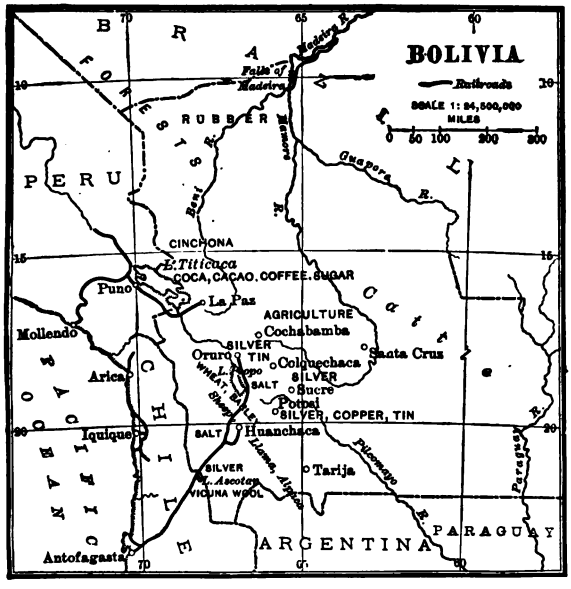

Fig. 140.—Observe the two outlets for Bolivia's products by rail (1) from Puno to Mollendo through Peru, and (2) from Oruro to Antofagasta through Chile; the third outlet is by pack trail to Jujuy, connecting there with the Argentine railroads. Mining is confined to the mountainous part of the country. Indians carry great quantities of salt to the mining centers for the reduction of ores. The Huanchaca silver mines, the richest in Bolivia, supplied the money to build the costly railroad to Antofagasta. La Paz, the capital, is a busy commercial center. North of it are fertile valleys supplying tropical products. Still farther north is the forest and rubber region of the Beni River in the Amazon basin.

the total exports, over 1,500,000 tons a year being sold in northwest Europe, where it is highly prized as a fertilizer. About one-tenth of the output is sold in this country. The nitrate trade has an important effect on the business of Valparaiso, the most important port on the Pacific coast

of South America. Valparaiso receives nine-tenths of the Chilean imports, but sends out only a third of the exports. The reason for this is that nitrate, the largest shipment, is sent to market through the so-called nitrate ports near the mines that yield the mineral.

Copper is the largest metal export, followed by silver and gold. The mining industries are mainly in the north, except coal of rather inferior quality, which is found in large quantities along the southern coast.

Wheat is the leading product of the busy agricultural region, and considerable quantities are sold to Peru and Ecuador. All the cereals of the temperate zone are raised in the rich central plain, besides tobacco and fruits. The forests afford excellent building and other timber, two native woods and Oregon pine supplying the demand for lumber. The large number of domestic animals is important mainly in the home trade.

Manufactures have greater development than in any other South American country. Iron-mills, sugar refineries, wagon-works, tanneries, and breweries are among the industries. Chile even makes steam-boilers, locomotives, and railroad cars.

Great Britain controls half of the foreign trade, France, Germany, and the United States dividing most of the remainder. There are regular steamship communications with Valparaiso, both by way of Panama and the Magellan Straits. The largest imports are textiles, sugar, coal, iron, and tea. The largest exports are nitrate, copper, silver, wheat, iodine, and sole leather. The exports are nearly one-third larger than the imports.

The West Indies.—The nearest and best market for the sugar, tobacco, cacao, and fruits, which are the chief products of the West Indies, is the United States; our country is also the nearest and best source of supply for the flour and provisions they must import. Their commercial interests, therefore, are closely identified with the United

States, though they are all politically attached to European countries, excepting Porto Rico (pages 146–148), Cuba (a republic, 1902), and the negro republics Santo Domingo and Haiti. The wealth of the West Indies is mainly in agricultural products, the animal and mineral resources being comparatively poor. The greatest commercial disadvantage are the hurricanes, usually in the fall months, which sometimes destroy much property. Active volcanoes on some of the islands are occasionally the cause of great destruction.

Cuba.—This is the largest fertile island in America. Its climate, as throughout the West Indies, is tropical, but the favorable effects of the trade-winds and sea make it comparatively healthful. It has the same products as India or Java, and is a better home for the white race than those countries. The population is about equally divided between native whites of Spanish origin and negroes or mixed races. Most of the labor in the tobacco-fields is white, while that in the sugar-cane fields is black.

The most important product is sugar, which employs more hands and machinery than any other industry (Fig. 141). The soil is so fertile that seven crops of cane are grown with one planting. All inventions for improving and cheapening the product are utilized, with the result that no raw cane-sugar is better and cheaper than that of Cuba. It is Cuba's great advantage that her cane-fields are near the United States, which is the largest cane-sugar market in the world. Observe, in Fig. 142, the regions south and east of Matanzas, where most of the cane is grown.

Sugar has suffered from the great decline in the price of this commodity; but Cuban tobacco is a staple crop, because its success depends solely upon the amount of the harvest. It is not affected by competition, as sugar is, because Cuban tobacco, particularly the varieties grown in the river valleys and on the southern mountain slopes of the Vuelta Abajo region in the west, has a distinctive

aroma that establishes a demand, and places it in a class by itself. Raising only one-seventh as much tobacco as

FIG. 141.—GRINDING SUGAR-CANE.
Oxen are the motive force. This primitive method is used in all the islands except Cuba, where steam machinery is employed.

the United States grows, Cuba can not supply the demand, and considerable tobacco is imported from Porto Rico and elsewhere for her manufactures. Much Cuban leaf is sent

to Key West and other towns of the United States to be made into cigars.

The other agricultural crops are of small commercial importance; nor are the minerals of much value as yet, though manganese and prime iron ore are shipped to the United States and Europe.

Roads are very poor. The journey from Havana to Santiago has always been made by sea, but a railroad between those cities has at last been opened. Development has been retarded by inferior inland transportation.

Havana, the only large city of the West Indies, with one of the finest harbors in

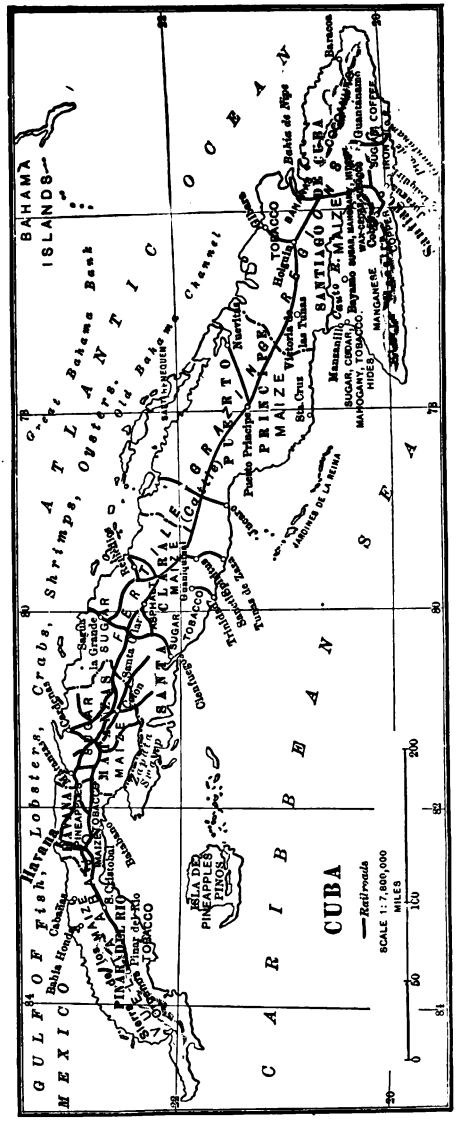

FIG. 142.

America, handles a large part of the sea-trade, and has regular steam communications with our country and Europe. A number of ports, as Matanzas and Santiago, are secondary centers of trade, handling the commerce immediately tributary to them. Honey, wax, hides, and rum also are sold abroad in considerable quantities. As Cuba raises no cereals, she buys flour and rice; producing no coal, a great deal is imported; as domestic beef is not cured, but eaten fresh, jerked beef from South America and our hog products and fish are large imports. Textiles, kerosene, and lumber are among the other purchases. We not only buy most of the exports, but also supply most of the foodstuffs that are Cuba's main imports.

The Negro Republics.—Coffee is the chief product of Haiti, two-thirds of it going to France. Logwood and cacao are also important sales to Europe. We buy little from Haiti, but supply more than half the imports, monopolizing the trade in breadstuffs, kerosene, and coarse cotton goods. Nearly all the sugar, tobacco, and cacao of Santo Domingo come to our country, which also supplies more than half the imports.

The British West Indies.—Manufactures in the British West Indies are restricted to those branches connected with planting, such as the manufacture of sugar, rum, and molasses. The Bahamas have a mild and agreeable climate, which makes Nassau a winter health resort. Four-fifths of the trade is with the United States. The main support of the islands is collecting and shipping sponges, the fruit trade being the next largest source of income. Nearly half of the exports of Jamaica are fruit, chiefly bananas sent to this country. Barbados is the most important of the minor British possessions, and the largest sugar producer (Fig. 143). All these colonies are buyers of foodstuffs and manufactures, a great deal of their supplies coming from the United States. Trinidad (Fig. 135) is the most notable source of asphalt, used for street pave-

ments, roofing materials, and other purposes. The pitch is broken up for shipment into pieces weighing 20 to 30 pounds, and is dumped into the holds of vessels that bring about 100,000 tons a year to this country.

FIG. 143.—CUTTING SUGAR-CANE.
The workman has cut off the leaves, and the stalk is now ready to be ground.

Bermuda.—The sole industry of this group of coral islands is agriculture. Three-fifths of its exports are onions, one-fifth potatoes, and most of the remainder lily bulbs, the United States taking practically everything that is shipped. Bermuda's advantage is that her onion and potato exports reach our markets before our own crops mature. Lily bulbs are shipped to New York, where they are sold to the hothouse trade to be planted under glass for the Easter market. As Bermuda has no manufactures and few animals, it needs many foodstuffs, textiles, and hardware. Much of the money it spends in our country and England for these supplies comes back to the islands from the tourists who go to Bermuda to enjoy the genial winter climate.

CHAPTER XXIX

JAPAN AND CHINA

Japan.—Japan is similar to Great Britain and Ireland in size and population. Fig. 144 shows the four largest islands, which are the home of nearly all the inhabitants. It is a very mountainous country, with valleys between the ranges and wide, low plains along the coasts. These lower lands teem with industry, for nearly all the people live on them. Education is wide-spread among the Japanese, who are the most advanced people of Asia.

Vegetable products.—All the soil that can be tilled is utilized, even some mountains being cultivated to their tops. The largest crop and the staple food is a superior quality of rice, which is grown everywhere in the lowlands. As Japanese rice is preferred in some markets to any other, a large quantity is exported, and cheaper Asian rice is bought to meet the home demand. Wheat and other cereals are grown with success, but much wheat and flour is imported.

Tea is most important in trade. Tea gardens and plantations are scattered over large areas (Fig. 144). Green tea, the favorite kind in the United States, is the main product, the finest qualities being packed in jars to retain the aroma. Three-fourths of the exports are sent to the United States. Cotton is grown in the south, but it is very short staple, and supplies only a small part of the fiber required. As Japan makes most of its cotton fabrics, the imports of raw cotton are worth about four times as much as the cotton cloth imported. India sends half of

the raw cotton, while a fourth of it comes from our Southern States.

Animal products. — There are no donkeys, sheep, goats, or geese in Japan. The Japanese seldom eat meat, and cattle are raised only for the plow and carrying purposes. Japan has very little land for pasture because it is needed for food crops. The most important animal resource is the Japanese

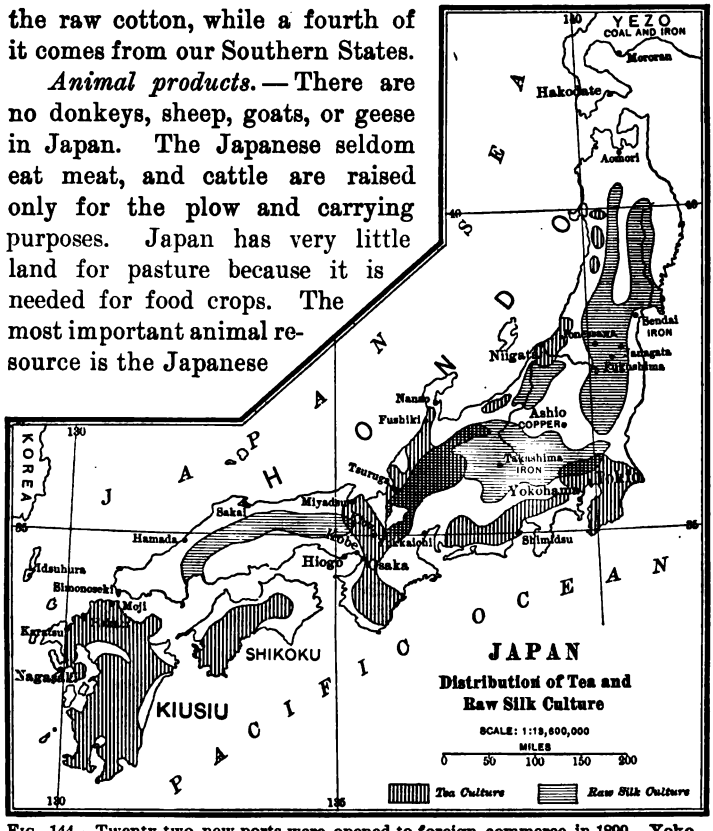

FIG. 144.—Twenty-two new ports were opened to foreign commerce in 1899. Yokohama, which has a spacious harbor, transacts more than half the external trade of the country. It is favored by the proximity of the greatest silk-growing district and of Tokio, the capital and most populous city in the empire, which has a poor harbor. Kobe is the second port in importance, one of the centers of the tea trade, and other commerce of central Japan. Near it are Osaka, the largest manufacturing city of Japan, excelling chiefly in cotton-spinning, and the ancient city of Hiogo. Kioto, noted for its distinctive Japanese industries, sends a great deal of tea and raw silk to Kobe for shipment. Nagasaki, with its shipyards, has the advantage of a neighboring coal-field.

silkworm. Observe the distribution of raw silk culture in Fig. 144. Three-fifths of the raw silk comes from the area

west of Tokio, and one-fifth from the northern area. These districts produce the best quality, their strong, firm fiber being particularly desirable in the manufacture of ribbons and laces. The output of raw silk is second in quantity only to that of China. About half the silk is retained for the manufacture of the characteristic fabrics worn by the people of the country and exported in large quantities. Many plain Japanese silks are brought to this country and printed here before being placed on the market.

Fish is a large article of diet, the Japanese fisheries being among the most important in the world. A great deal of fish is exported to China and other countries.

Mineral products.—The mineral wealth is not very great, and it is only within recent years that mining has been energetically pushed. Coal is mined in Yezo and Kiusiu, considerable being exported to Shanghai. The largest copper mines in Asia are at Ashio, copper being the only metal exported. The iron product falls short of the home demand, so that iron and steel wares are large imports. The famous earthen and porcelain wares of Japan, which have so wide a sale in foreign lands, are made from kaolin of superior quality.

Manufactures.—The Japanese desire to make their own commodities. They have been quick to realize the advantages of western methods and processes of manufacturing, and are making many imitations of European and American articles which were not even known in their country fifty years ago. There seems, however, to be no prospect that they will seriously compete with western manufactures, for the reason that many of their goods do not compare well in quality with those made in America and Europe.

Commerce.—The internal trade carried on both on land and sea is very large. It is favored by fine highways, 3,000 miles of railroad, and telegraph and postal services extending to all parts of the country. The Japanese own a

large part of the merchant marine connecting their country with other lands; they have their own regular steamship-lines to our Pacific coast, Australia, Shanghai, Korea, Vladivostok, and Bombay.

The foreign trade has increased fivefold in thirty years. The raw silk and tea sent to the United States make this country the chief customer of Japan. Raw silk is the leading export, and France and the United States are the largest buyers. Other Asiatic countries buy large quantities of Japan's cotton goods. Most of the imported textiles, machinery, and iron goods come from Great Britain and Germany. Great Britain buys from Japan only one-fifth as much as the United States purchases, but her sales to that country exceed the value of the kerosene, sole leather, tobacco, lumber, and other articles we sell to Japan.

The island of Formosa, now a Japanese possession, sends us a large amount of Oolong tea and other varieties, which are regarded by many as the finest exported. The camphor forests yield 6,000,000 pounds of camphor a year, Formosa controlling the world's trade in that commodity.

China.—China is the largest agricultural nation. The surface and climate of China are favorable for large crops. The enormous population requires that all tillable lands be cultivated like gardens, so that the greatest possible quantity of food may be produced. It is forbidden by law to export rice from the empire, because China can not grow all the rice it needs.

The climate is somewhat similar to that of the eastern part of the United States; many of the trees and other forms of vegetation are identical in the two countries. While rice is the great food staple, a large amount of wheat and other products of the temperate zone are raised.

Agriculture.—China's consumption of food taxes her producing capacity so severely that a failure of the harvest in any large area causes the death of many thousands

of people. The home food produced is, therefore, not important in international trade. The chief staple of foreign commerce is raw silk, one of the great sources of China's wealth. Nearly all provinces produce silk, but nine-tenths of the output comes from the plains of the Yangtse River and the region west of Canton (Fig. 145). The yearly product amounts to over 30,000,000 pounds, fully half or more being exported. China produces about half the raw silk of the world. The exports are sent to Shanghai and Canton to be shipped to the United States and Europe. As the prosperous classes in China wear a great deal of silk, the cloths made of this fiber on hand looms in the homes of the operatives, or in a few mills near Shanghai and Canton using western machinery, are enormous in quantity. The Chinese still make silk goods and embroideries that the Western world has not been able to reproduce either in texture or color.

Tea is second in importance as an export staple. It is the daily beverage of all the Chinese; the exports are worth about half as much as the silk exports. Russia and the United States are the largest purchasers. The trade has declined in recent years on account of the competition of the tea plantations of India and Ceylon, whose black teas supply Great Britain and the British colonies with most of their imports. Tea-growing in China is a garden culture and a hand industry, while the plantations of India and Ceylon are sometimes thousands of acres in extent, permitting the use of machinery in tea-curing, which is a great advantage.

China produces one of the large crops of cotton, and consumes all of it. Every farmer in the cotton areas, which are most extensive along the lower Yangtse (Fig. 145), has a patch of cotton, the women of the family spin and weave it and sell the surplus cloth to their neighbors. Enormous quantities of yarn and cloth, however, are imported, the home supply being inadequate, as the poorer

people wear nothing but cotton and China grass even in the coldest winter weather. Cotton cloths are the largest

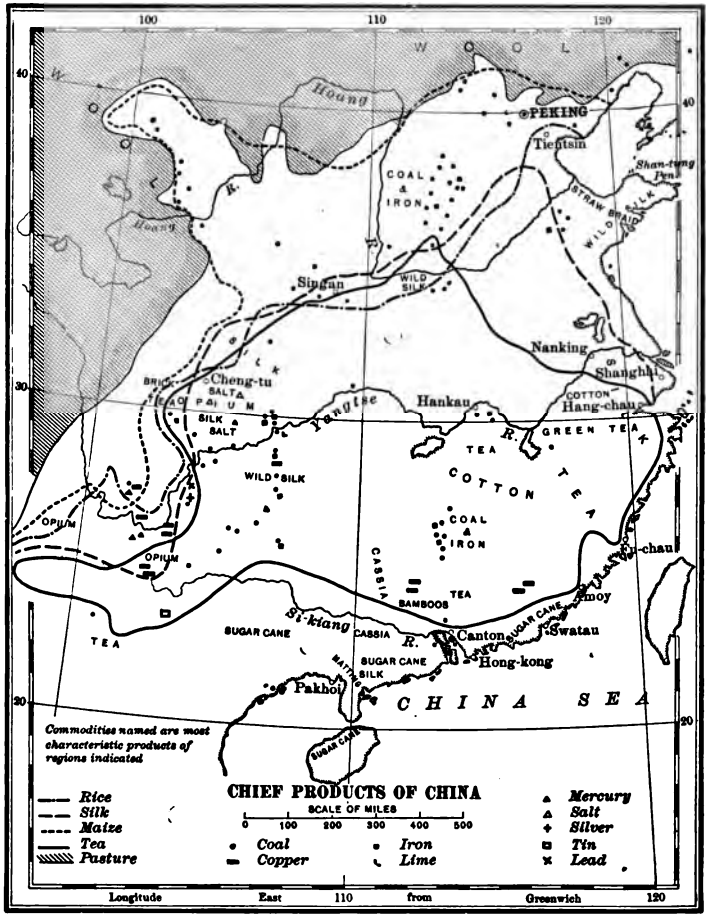

FIG. 145.

import into the country, the United States supplying a great part of the north China trade, while England dis-

tributes its cotton goods through Hongkong over south China.

The empire imports a considerable amount of lumber, as the forests have been cut down to increase the tilled lands. The wax-tree of China is a variety of oak, whose wax, deposited by insects, serves all the purposes of beeswax, the product being worth over $1,000,000 a year.

As the Chinese eat little meat, the raising of domestic animals, excepting poultry, is not very important. Eggs are a large export to Japan. Fish is a staple article of food, the sea and river fisheries being among the great industries.

Mineral resources.—The mineral wealth is very large, but mostly undeveloped. It is believed that the coal-fields are the most extensive in the world, but the cost of transport overland is so high that English coal is sold more cheaply than Chinese in the seaports. Iron of excellent quality is found closely associated with coal in some areas, but the manufacture of iron by modern methods has scarcely begun. The country is rich in superior China clays, which are the basis of the renowned porcelain industries at Kungchow and other places.

Manufactures.—Chinese manufactured goods are honestly made for hard service, and are the best industrial products of the Orient, though judged by western standards they are inferior. The Chinese employ little or no machinery, and do not understand the advantages of the subdivision of labor, each product being the work of a single artisan; but they make nearly everything that the hundreds of millions of people in the empire use. They particularly excel in the manufacture of bamboo paper exported to Europe and America, carved, lacquered, and gilt ware, porcelains, and silk stuffs.

Most firecrackers are made in the homes of persons who sell them. The cheapest straw paper and powder are used, with better paper for the wrappers. After forming the

paper cylinders they are tied in bunches of 200 or 300, clay being spread over one end and forced inside each cracker with a punch. The powder is then poured in at the other end, the Japanese paper fuse is inserted, and the edge of the paper is turned in with an awl. Forty persons, each earning 5 to 7 cents a day, can make about 100,000 crackers a day.

Commerce.—The average cost of transportation in most of China is two or three times as much as in countries pro-

FIG. 146.—A view in Canton Harbor.

vided with railroads. The common roads, or paths, are very poor; thousands of men trundling wheelbarrows do the work of beasts of burden. Only the Yangtse river system is of first-class importance for navigation, though lesser streams are utilized to a large extent by small boats. A network of canals covers the country, but many of them

are in poor repair. Transportation adds much to the cost of commodities, and most of the export articles originate near the sea or the Yangtse and its larger tributaries. Railroads are now rapidly developing. One of them connects Peking with Hankau and is under construction to Canton.

Great Britain and her colonies control more than half of the Chinese trade. The British trade, however, is declining, owing to the smaller purchases of Chinese tea and the growing sale of our cotton goods in north China. Cotton cloth, opium,* petroleum, hardware, and sugar are the largest imports. Raw and manufactured silk, tea, hides, paper, and chinaware are the most important exports. We sell to China mainly cotton goods, petroleum, flour, and lumber, and buy from her tea, raw silk, and a few other articles.

Manchuria is the most valuable part of the empire outside of China proper, and one of the best Oriental customers for our cottons and other goods. Wool is the chief product of Mongolia. Eastern Turkestan and Tibet, also parts of the Chinese Empire, have little importance in foreign trade.

Hongkong is the most important foreign possession in China. The port of Victoria on this little island, acquired by England in 1841, is open free to the commerce of all nations, and is a collecting and distributing point for the merchandise of the Orient and the Occident. Enormous quantities of commodities from Asia and its islands are taken to Hongkong to be shipped to many countries, which in turn send their goods to Hongkong to be distributed to various Asiatic ports. Thus Hongkong is a great receiving and forwarding station for south China, as Shanghai is for east and north China.

* The importation of opium is now prohibited, but much is still smuggled into the country.

CHAPTER XXX

INDIA—CEYLON—RUSSIAN ASIA—THE LESSER COUNTRIES OF ASIA

India.—India is isolated from the rest of Asia by great mountain ranges. It is reached easily only by sea. The ports, therefore, are the gateways into the country (Fig. 147). The rivers Ganges, Brahmaputra, Indus, and Irawadi, which are all in the north or continental part of the country, form important trade routes. Railroads, the great highways of the peninsula, connect all important points of the interior with the leading ports, so that products have comparatively easy access to the sea.

At the foot of the Himalayas, the great wall along the northern frontier, extends a low fertile plain, east and west, across the country. Here the population is more dense than elsewhere, except along the narrow coast strip. South of the plains are highlands which cover the peninsula. The soil both of plain and highland is rich, and as a rule there is sufficient water for crops; but irrigation is needed throughout India not only where rainfall is deficient, as on the wide, wheat-growing plain of the Indus, but also in districts where summer rains are ample but winter rains are light; for crops, growing the year round in this very warm country, need water in every month.

Vegetable products.—Nine-tenths of the 294,000,000 inhabitants till the soil. In no other part of the world is vegetable food so important, because three-fourths of the inhabitants are forbidden by their religion to eat meat. Cereals, vegetables, fish, and milk are their food resources.

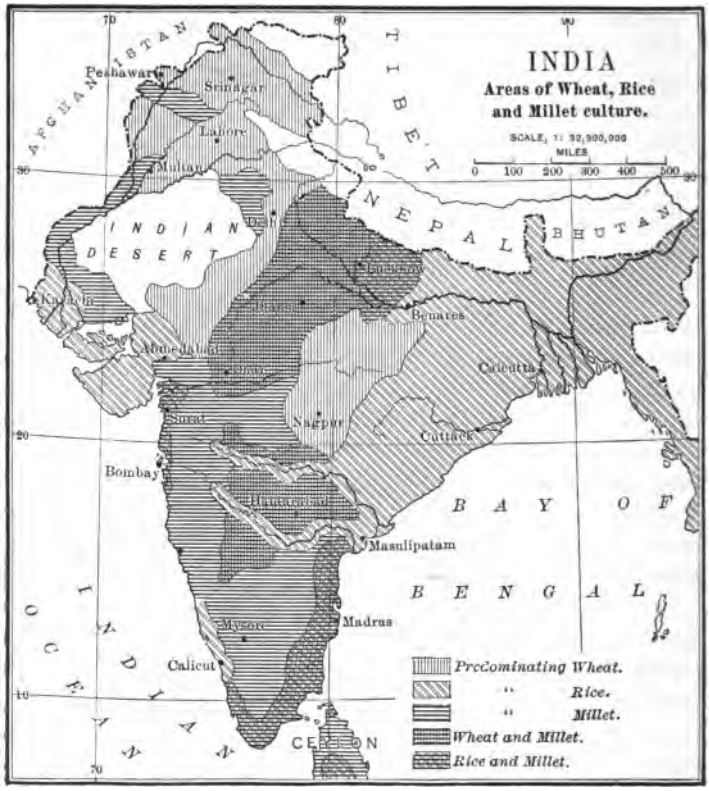

FIG. 147.—The important ports, though few in number, are well distributed to meet the needs of the country. Calcutta, the largest city in the British Empire except London, is the center of business in Bengal. Bombay is the center of commercial relations with Europe, America, and the far East, its Western trade passing through the Suez Canal, the Oriental traffic going by way of Singapore. Its harbor, protected by islands, being the best in India, it commands nearly half of the exterior trade, with wheat and cotton as its largest exports. Its proximity to the cotton fields makes it the largest center of cotton manufactures. Madras handles nearly all the commerce of the southwest. Karachi is the wheat port of the Punjab.

The farmers are very poor, because the land is so minutely subdivided that the ground tilled by each family barely suffices for a meager subsistence. Each farmer, hav-

ing little to sell, can buy little. The total foreign trade is very large, but it is less than $3 a year for each man, woman, and child in India, while Great Britain spends eighteen times as much per capita for its chief imports alone.

Rice and millet are the food staple of the larger part of the people. Rice, thriving best on hot lowlands where the fields may be flooded, is most cultivated along the rivers and on the coasts. Millet is a great crop on the drier uplands of the peninsula and in parts of the Indus basin; thus rice is the chief cereal consumed along the coasts and in the valleys, while more millet than rice is eaten in the interior. No millet and very little rice are exported, for the people need all that is raised; the great rice exports are from the province of Burma, on the east side of the Bay of Bengal.

India is one of the greatest wheat producers (Fig. 147). Wheat is grown as cheaply as on our Western prairies, and in good crop years large quantities of wheat and flour are exported to Europe, chiefly Great Britain. Bombay and Karachi are the wheat-shipping ports (Figs. 148 and 149).

Cotton, raw and manufactured, is the largest export (Fig. 150). India has been the second largest grower of cotton since our civil war, when Europe depended largely upon India for its cotton supply (page 84). Many cotton-mills at Bombay and other cities produce large quantities of cotton yarn sold in China, Japan, and other Oriental markets, and cloth exported chiefly to East Africa.

Jute is second in importance among the fibers. Bengal is the chief source of supply, for it grows better along the lower Ganges than in any other part of the world. Jute gunny-bags and other products are exported to the value of $20,000,000 a year. Nearly the whole crop, raw or manufactured, is sent to Great Britain, the United States, and other countries. Indigo has been a great industry in the Bengal province of Behar, but the artificial production

of this dyestuff in Germany is replacing vegetable indigo. The Government monopolizes the manufacture of opium, which is sold to Chinese smokers; but the production of

FIG. 148.—Harbor of Bombay.

opium is decreasing because China has prohibited opium smoking, which is very harmful to smokers. The trade is falling off.

Tea is one of the largest exports. India supplies two-thirds and Ceylon one-third of the Indian teas which have largely supplanted Chinese teas in England and the British colonies, and is invading the United States and other markets (Figs. 150 and 151).

Animal products.—In so densely peopled a country there is little room for pasturage. This fact, as well as the

prejudice against meat, restricts stock-farming. Cattle are raised for draft purposes and milk, and sheep and goats for their wool. The silkworm is reared, but the imports of raw silk are larger than the home production.

Manufactures.—The native textiles, artistic metal work, weapons, and other articles of manufacture have been famous

FIG. 149.—A flour-mill run by wind power in northern India.

for ages. House industries are found everywhere, and every village has its craftsmen of all sorts. Many modern branches of manufactures also are being introduced, including cotton- and woolen-mills, flour-mills, tanneries, shipyards, iron foundries, and breweries. Many of these facto-

ries are controlled by British capital; but all the Indian industries do not begin to supply the demand for manufactured goods.

Commerce.—Many of the common roads are kept in excellent condition. Besides railroads, rivers, and canals,

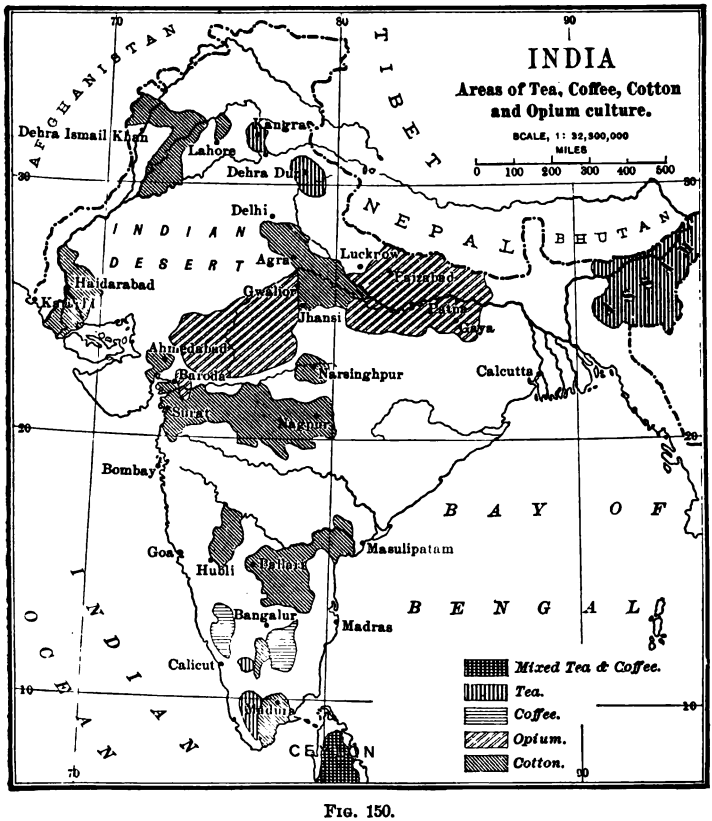

FIG. 150.

elephants, camels, and wagons drawn by zebus are used in transportation. Nearly all of the foreign trade centers in the four great seaports of Bombay, Calcutta, Madras, and

Karachi (Fig. 147). Many steamship-lines connect these ports with Europe. Raw cotton sent to Europe and Japan, cotton yarns to China, and cotton textiles to East Africa are about one-sixth of the total exports. The other large sales are hides and skins, oil seeds, tea, jute, and opium. India, being poor in minerals and general manufactures, imports metal wares, textiles, and manufactures to the value of about two-thirds of the exports. England has nearly three-fourths of the import and over a fourth of the export trade. The United States sells little to India, but buys a large amount of jute, hides, indigo, and tea.

FIG. 151.—A TEA-PLANTATION IN INDIA. Picking the leaves.

Burma, a province of India, is the greatest source of rice exports, selling abroad nearly half the rice it raises. The world's chief supply of rubies, one of the most valuable of gems, comes

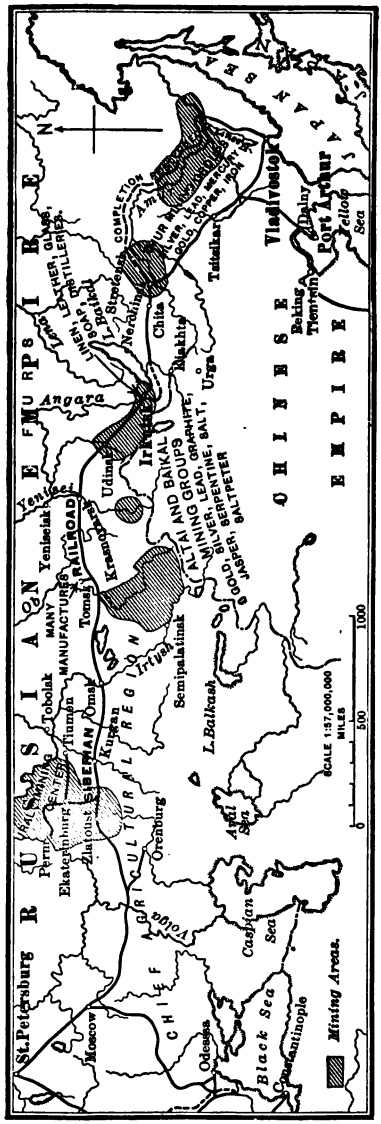

FIG. 152.—Southern Siberia.

from Burma. The Irawadi is a fine highway of commerce through the heart of the country, between Mandalay and the port of Rangoon.

Ceylon.—The great tea-plantations of the island of Ceylon contribute nearly half of its exports. It produces more graphite than any other country, half of it coming to the United States. Copra and cinnamon are also important exports.

Siberia.—The frost-bound northern third of Siberia is of little value for commerce. South of this region is a continuous forest of conifers, from the Ob River to beyond the Lena, yielding lumber and abounding with fur animals. In southern Siberia (Fig. 152) is the agricultural zone. The southwestern part is the most fertile and thickly settled region. It is from this area

that wheat and domestic animals are mostly exported. Here also are large numbers of cattle and sheep, cattle being most numerous near the large towns, where the demand for dairy products and beef is greatest.

The mineral resources are enormous. Two-thirds of Russia's gold output comes from Siberia. The silver output is comparatively small, and little attention is as yet paid to other metals, though they are abundant.

Most manufactured articles are derived from Russia. That country is stimulating an enormous immigration to Siberia, and expects to make it a large market for Russian manufactures. Lumber-making is the chief industry, but general manufactures are now established at Tomsk, Irkutsk, and a few other towns.

The Siberian railroad, now extended from ocean to ocean (1902), is promoting the development of Siberia. The rivers are also very important in transportation. Hundreds of steamers and barges ply on the Ob, while the Yenisei, the Lena, and other rivers are important highways.

Most of the business is done with Russia, and a considerable amount also with China, though Siberia is, for the most part, merely a forwarding agent for the Chinese trade with Russia. Vladivostok, the Pacific coast port, has trade relations with west Europe, Japan, Korea, and our Pacific coast. As wheat does not thrive in east Siberia, our wheat and flour, as well as building materials, farm implements, and iron and steel products, are imported through Vladivostok. The policy of the Russian Government is to keep out of Siberia all foreign manufactures that Russian shops and mills can supply.

Caucasia.—Petroleum is the largest product of Caucasia. Nearly the entire population around Baku, on the Caspian Sea, is engaged in collecting petroleum from deep wells and preparing it for market (Fig. 121). Most of the oil is used as fuel in factories, river steamers, and locomotives. Large quantities of petroleum are also refined, the kerosene

being sent to Batum for shipment to Russian or foreign markets, or sent on the Caspian to the Volga River, by which it is widely distributed through Russia. Batum, the best harbor on the east coast of the Black Sea, exports kerosene, wheat, the noteworthy carpets and embroideries of Erivan (Fig. 121), and raw silk for Moscow mills. Many thousands of wooden and tin cases in which to ship kerosene are made at Batum, though a great deal of the oil is forwarded in bulk.

Russian Central Asia.—This great territory, between the Caspian Sea and India, is largely an arid desert, but fine oases are interspersed among the sand wastes, where rivers supply water for irrigation (Fig. 153). The region became important in its trade relations with Russia only after the building of the Trans-Caspian railroad. Cotton is the largest export, nearly 800,000,000 pounds being shipped to Russia every year over the railroad. Russia is depending more and more upon Russian Central Asia for its supply of this fiber. Russia's policy of extending railroad-lines and irrigation works is greatly enlarging the areas of cultivation.

Persia.—Difficulties of transportation and lack of capital are obstacles to the commerce of this rich country. It is an elevated table-land, a third of it desert and salt plains with other irrigated plains and valleys watered from the mountains, and growing wheat, the poppy (opium), raw silk shipped to western markets, cotton sent to Bombay, Moscow, and Marseilles, tobacco that is smoked throughout the southwestern part of Asia, and dates exported through the Persian Gulf (Fig. 154). The large mineral resources are neglected, but practically all the turquoises in the markets come from northeastern Persia. The most important manufactured export is Persian carpets and rugs, made in a great variety of patterns, no two being alike. The imports are much larger than the exports, consisting of textiles, Russian sugar and kerosene, carriages, and gen-

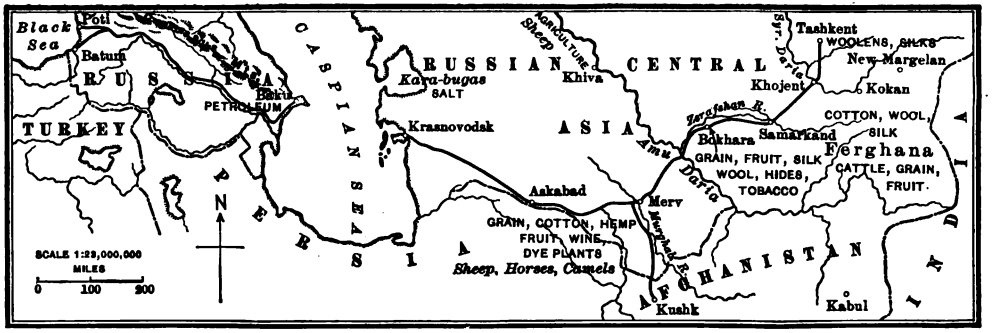

FIG. 153.—Krasnovodsk, the Caspian port from which the Trans-Caspian Railroad starts, is connected with Astrakhan at the mouth of the Volga, and with Baku, by lines of steamboats. Askabad, made fertile by streams led from mountains on the Persian frontier, has import and export trade with Persia. The Merv oasis, watered by the Murghab, is very fertile. The plain of Ferghana, nearly surrounded by mountains whose streams are led into irrigation canals, is a blooming garden, the most fertile part of Russian Turkestan. The city of Bokhara, famous as a seat of Mohammedan learning, is surrounded by a fertile district, manufactures fine cotton and silk fabrics and ornamental leather, and is a center for the sale of Russian, Persian, and British products. The waters of the Zerafshan are nearly exhausted in giving fertility to the regions around Bokhara and Samarkand. The Russians have built a new town adjoining the ancient and historic city of Samarkand. Kokan and New Margelan are great centers of cotton and silk culture, and have textile, leather, and other industries. Tashkent, the commercial and political capital of Russian Central Asia, and the second largest city in Russian Asia, at the convergence of ancient caravan routes leading to Russia, is surrounded by irrigated fields growing wheat and other cereals, cotton, and enormous quantities of fruit; it has 156,000 inhabitants, of whom 30,000 are Russians, and is a center of silk, cotton, woolen, and leather industries. Khiva, the great slave market of Central Asia before the Russian invasion, is watered by the Amu Daria (the ancient Oxus), has large herds of camels and flocks of sheep, and exports and manufactures its large cotton crop. Most of the oases raise great numbers of cattle, sheep, horses, and camels. The fishing industry is important along the shores of the Caspian.

eral wares. Russia and England are rivals for the trade of Persia and divide most of it between them.

Aden.—This British town, on the southwest coast of Arabia, is a free port serviceable to all the leading commercial nations. As it is open to all nations, it is a receiving and forwarding port for the commodities of the surrounding

FIG. 154.—The date palm.

countries. Many products from East Africa, for example, are sent to Aden in small vessels to be transshipped to ocean liners.

The Straits Settlements.—The chief product of this crown colony of Great Britain is tin, which is smelted at Singapore in the largest tin smelting works of the world. Our country buys half of the metal used in its tin-plate mills from this source. Singapore, with its large landlocked harbor, is a great receiving and forwarding port for South Asia west of Hongkong. Shanghai, Hongkong, and Singapore all play the same rôle in international trade. They are great entrepôts for the commercial exchanges between the Orient and the Occident. Most of the spices of the

Malayan Archipelago are shipped to us through Singapore (page 57).

Siam.—The valley of the Menam River is the richest and most populous part of Siam. Rice, grown in the delta of the Menam, is not only the chief article of food, but also the leading product and export. The size of the crop depends upon the rise and fall of the Menam, the crop being large when the river is high enough to thoroughly flood the paddy-fields. Only Burma and Cochin-China surpass Siam in rice exports, which are four-fifths of the total foreign sales of that kingdom. The next largest export is teak; the logs are floated 500 miles down the Menam to Bangkok, where they are squared in sawmills and sent to London and other markets. Bangkok can not be reached by large steamships on account of the bar at the mouth of the Menam. Only Danish and Dutch steamers ply regularly to Bangkok, most of the foreign trade being transshipped at Singapore or Hongkong.

French Indo-China.—Rice is the chief product of Cochin-China, Cambodia, Annam, and Tonkin, which comprise French Indo-China. Cochin-China sends more rice than any other country to Hongkong and Singapore to be distributed in other Asiatic lands; most of the Burma rice goes to the western countries. All these dependencies are rich in resources, but their development, except in Cochin-China, is small. Most of the textiles, general manufactures, and kerosene they buy come from England, the United States, and Japan.

Korea.—This country is rapidly opening to foreign trade and influence. As the country is almost wholly agricultural, beans, rice, hides, and ginseng are the only important exports, except a little gold. Cotton cloth is more than half of the imports, silk goods and kerosene also being important. Japan has built a railroad through it.

The Dutch East Indies.—No other Asiatic colonies contribute so much to foreign trade as the Dutch possessions.

The richest of them is Java, the most densely populated land near the equator. The entire island, except the higher parts of the mountains, has been turned into gardens. The lowlands produce one of the greatest crops of sugar-cane. In the middle zone are the coffee-plantations, Java coffee being found in all the markets of the world. Still higher are the tea-plantations, which yield about 25,000,000 pounds a year. Java is also the largest producer of quinine. Sumatra's products are similar, but it raises far more tobacco, its chief export, of which the United States buys about $4,000,000 worth a year. The little islands of Banka and Billiton are among the large sources of tin. All the other Dutch islands are important for spices, gutta-percha, gold, or other products, and all contribute to the commercial greatness of the mother country.

CHAPTER XXXI

AUSTRALIA, NEW ZEALAND, AND OCEANIA

Australia.—The Commonwealth of Australia, a British colony, is the smallest of the continents, being about as large as the United States, exclusive of Alaska. The population (little more than that of New York city) is nine-tenths British. Fig. 155 shows the narrow areas, chiefly in the southwest, where the rainfall is sufficient for agriculture, the drier grazing lands behind the plowed areas, and the thirsty desert of the interior, in which rich gold-fields have been discovered. The three great resources are animal-raising, mining, and farming. Being in the southern hemisphere, the farm-crops (wheat, maize, grapes, etc.) are matured and marketed in the winter and spring of the northern hemisphere, when prices in the purchasing countries are likely to be highest.

Animal products.—Sheep are the main dependence, and wool is the great product. Wool is more cheaply produced than in most countries, because the flocks, living in the open air the year round, require no winter fodder, and pasturage and land are very cheap. The wool is mostly merino, of a superior quality, and is sent to market scoured and ready for the manufacturer. The railroad system was extended far into the plains to the Darling River (Fig. 156), solely to meet the demands of the wool trade. New South Wales has more than half of the sheep, Queensland being second in this industry; Victoria is third in the quantity of wool, but the fiber is unsurpassed in the world for fineness and length of staple, due to the quality of the grass

and the drier air. A great disadvantage in the sheep industry, however, is the long droughts, which sometimes dry up the streams, causing the loss of millions of sheep.

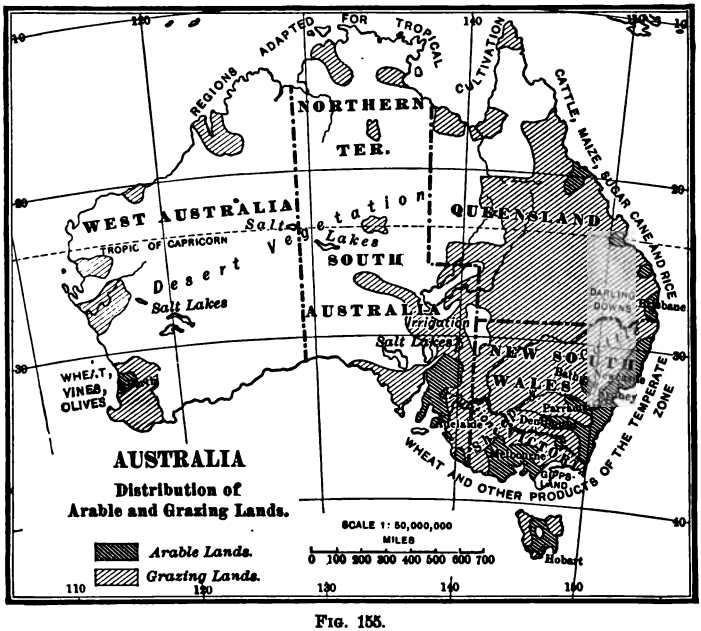

FIG. 155.

Nearly the whole wool-crop is exported to all the great manufacturing countries buying more or less Australian wool. The few woolen-mills of Victoria and New South Wales consume only a very small part of the crop. Wool-buyers from Europe annually visit the markets at Sydney and Melbourne (which, with Liverpool, regulate the price of wool in every country), Geelong, and Adelaide to make their purchases, which sometimes amount to $100,000,000 or more in a year. Nearly two-thirds of all the wool imported into Europe by sea comes from Australia.

Another great industry is the frozen-meat trade. Aus-

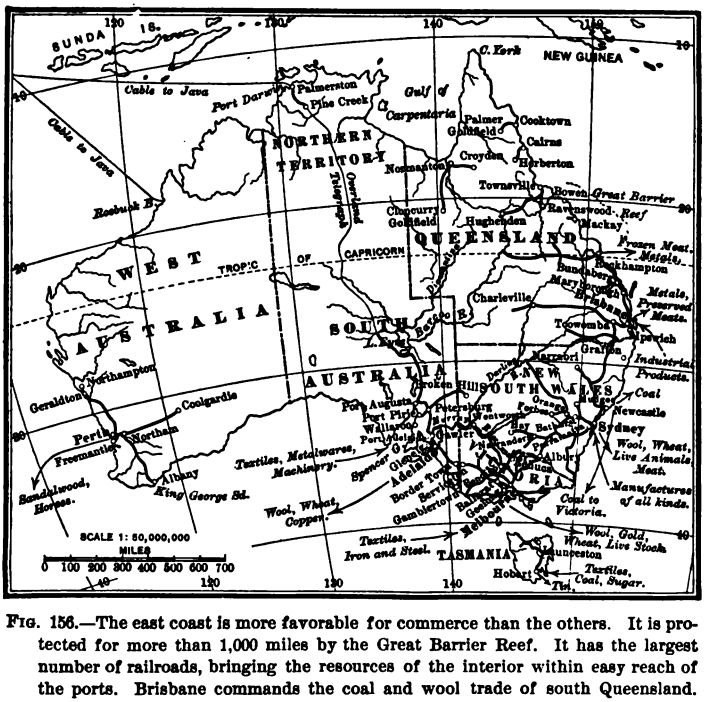

FIG. 156.—The east coast is more favorable for commerce than the others. It is protected for more than 1,000 miles by the Great Barrier Reef. It has the largest number of railroads, bringing the resources of the interior within easy reach of the ports. Brisbane commands the coal and wool trade of south Queensland. Newcastle, the largest coal port in the southern hemisphere, depends upon the coal mines within a radius of 30 miles around it. Sydney, with over 100 miles of water front along its splendid bay, is the terminus of all steamship-lines between Europe and Australia. The west half of the south coast has no harbor except Albany, a port of call for steamers from Suez with freight for the west coast to be forwarded by rail. Adelaide, the outlet of a fine agricultural region, has a harbor that may be entered by the largest vessels in any weather. Melbourne, the largest city of the Commonwealth, on the river Yarra, has a commodious harbor; vessels of 8,000 tons may ascend the Yarra to the heart of the city, which handles nine-tenths of the foreign trade of Victoria. Fremantle, the most important port on the west coast, is now (1918) connected by rail across the continent with Sydney.

tralia sends to England every year millions of frozen sheep-carcasses. The business is confined to the four eastern states. Australian mutton is in great demand among the masses of the British people, as it is excellent in quality and cheaper than the home mutton. It costs three cents

a pound to kill, freeze, ship, and sell Australian mutton in London.

Cattle have the second place in the animal industries, but only Queensland is prominent in exporting frozen beef. The dairying industry is most important in Victoria, which sends more butter to England than the United States sells in that market.

Vegetable products.—Australia grows most of the useful plants of the tropical and temperate zones. Cotton of good staple thrives in Queensland and northern New South Wales. North Queensland raises enormous quantities of bananas for the Australian markets. Cane-sugar and maize are also great crops in the north. Wheat and the grape are the main products of the cooler and drier farm-lands of the south. The grapes from many thousands of acres are turned into raisins. Most of the export wheat comes from South Australia. The continent, however, is not a reliable contributor to the wheat supplies of importing countries, as short crops often result from severe droughts, and even in good years the yield per acre is not large; but irrigation is largely extending the agricultural area, and Australia's greatest importance as an exporter of breadstuffs is in the future (Fig. 157).

The native timber being hardwood, is not well adapted for ordinary building purposes, and therefore much pine is imported from our Pacific coast, Canada, and Scandinavia. The superior Australian hardwoods—jarrah for railroad ties and karri for wood-paving—are exported.

Mineral products.—The mineral wealth is enormous. Gold is the largest mineral resource, more than half the Australian output (1909) being supplied by the mines in the desert of West Australia. Nearly all the gold is minted at Melbourne or Sydney and exported in sovereigns and half sovereigns, a great deal coming to this country. The larger part of the coal comes from New South Wales, which exports coal to South Asia and even to our Pacific coast.

Tin is a large product, particularly of Tasmania, the island off the southeast coast. Extensive beds of iron ore are found in New South Wales. Gold, silver, tin, and coal are the only minerals that are yet mined on a large scale.

Manufactures.—No branch of the manufacturing industries yet supplies the needs of the country. While manufactures are growing in the larger cities the imports continue to consist mainly of the industrial products of other countries.

FIG. 157.—An artesian well.

Commerce.—The railroads are rapidly developing; but a great disadvantage of the railroad system is that each colony adopted its own gage, so that freight and passengers are still transferred to other trains at the frontiers of the states. Sydney, the distributing point for the entire east coast trade, commanding also the Pacific island trade, the terminal port in Australia of the foreign steamship service and growing in manufactures more rapidly than any other city, is the chief commercial center of the Commonwealth, and now rivals Melbourne in population.

Most exports are raw products, and most imports are manufactured commodities. By far the larger part of the trade is with Great Britain and the other British colonies.

The United States and Germany, as well as Great Britain, have regular steamship connections with Australia. The most important exports are wool, hides, meats, dairy products, gold and other metals, wheat, and flour. The main imports are manufactures, tea, coffee, and sugar. The petroleum, tobacco, and manufactures we sell to Australia are worth about five times as much as our purchases from that continent. The Australian exports more than pay for the imports.

New Zealand.—This country is one of the most prosperous colonies of Great Britain (Fig. 158). The climate is favorable for the white race; the inhabitants every year sell over $80,000,000 of their products to other countries. The constant westerly winds deposit most of their moisture on the west coast, so that the forests and forest industries are mainly on the west side of the islands, while the east side is more important for grazing, farming, and commerce.

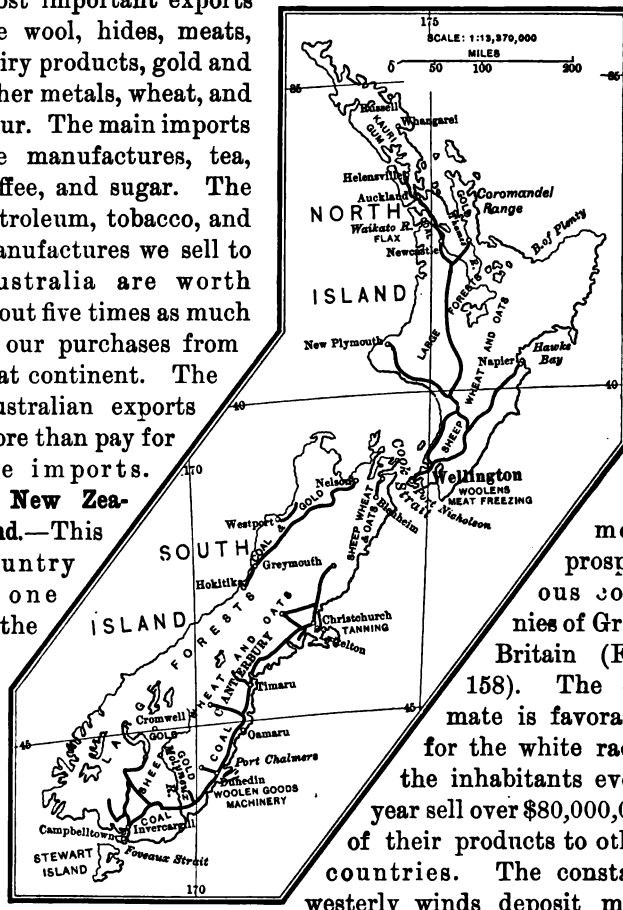

FIG. 158.—New Zealand.

Animal industries.—Sheep-raising is the leading industry. Animals and their products are more than three-fifths of the exports; wool is nearly two-fifths—the business of freezing and exporting mutton and beef also being very large. New Zealand mutton is regarded as the best that is sent to England. Enormous quantities of butter and cheese of excellent quality are exported. The dairy products are made in factories on the cooperative plan, as in Denmark, which insures an output of a high and uniform grade.

Vegetable products.—Wheat and oats (exports) are the principal crops, thriving best in the South Island, though also grown in the North Island. A distinctive product is New Zealand flax, or phormium, growing wild in the valley of the Waikato River. Another distinctive product is the tall kauri pine, yielding not only fine timber, but also the kauri gum of commerce used in making varnishes. The colony manufactures its own lumber, and exports some barks valuable for tanning.

Mineral resources.—Coal and gold are the only important minerals. Practically all the gold ($10,000,000 a year) is exported. As the coal (less than 2,000,000 tons a year) is not sufficient for home needs, coal is imported from New South Wales.

Manufactures.—Industrial development is stimulated by the supply of good coal near at hand. Wool-scouring and meat-preserving employ many thousands of persons. New Zealand is mainly independent of other countries in boots and shoes, woolen goods, brick, furniture, lumber, beer, and flour. Most manufactures are protected by a high tariff.

Commerce.—There are no important harbors on the mountainous west coast. The east coast has four fine harbors, besides others of importance in the coasting trade. Port Chalmers is the harbor for large vessels of the busy manufacturing city of Dunedin. Lyttelton is the port of Christchurch, the second largest city, which stands on the rich Canterbury plain where the largest agriculture and

sheep-growing are centered. The chief ports of the North Island are Wellington, the capital of New Zealand, and Auckland, the largest city of the colony and a port of call for steamships in the American-Australian trade.

Three-fourths of the trade is with Great Britain. Most of the remainder is with Australia, India, and Fiji. The United States has only a small proportion of the total foreign commerce. The imports are mainly manufactures; the leading exports are wool, frozen meat, gold, grain, phormium, kauri gum, hides, tallow, and timber.

FIG. 159.—The cocoanut-palm and its fruit.

Oceania. — The island groups of the Pacific have a growing trade with the rest of the world. They have tropical and some mineral products of much value in the world's markets, besides food-plants of special importance in the nourishment of the islanders.

The most thriving colony is the Fiji Islands, which sends a great deal of sugar, copra, and bananas to New Zealand and Australia. The French island of New Caledonia is exceptionally rich in minerals and metals, and is one of the largest sources of supply of nickel and cobalt. If we summarize the trade of all the many island groups we shall find that

their principal export is copra, the dried meat of the cocoanut. Observe the wide range (Fig. 19) around the world on both sides of the equator of the cocoanut-palm. It fringes all tropical islands of the Pacific, where it is found in its greatest perfection. The cocoanut is the food of millions of people in the East Indies and the Pacific, while

FIG. 160.—A fishing-boat in Fiji.

copra is largely used in the manufacture of soaps (Fig. 159). One of the extensive food resources of the islands is the fisheries around their coasts (Fig. 160).

The imports are manufactures and some food supplies. The total trade of all these many little groups is not equal to that of the Hawaiian Territory, which has the advantage of a cooler climate and high civilization; but the resources of the islands will some day be better utilized, and then their commerce will be much more important.

CHAPTER XXXII

AFRICA

Egypt.—The mud which the annual floods of the Nile spread over its banks enriches an area about as large as New Hampshire, giving life and commercial value to Egypt (Fig. 161). More than 11,000,000 people are distributed over the Nile delta and the fertile river banks. British influence is supreme in Egypt and has contributed greatly to its recent rapid progress. Although the climate is warm, temperate as well as subtropical plants are raised.

Three-fifths of the people are farmers. Cotton, raised mostly in the delta, exceptionally long in staple and fine in quality, supplies about three-fourths of all the exports. The entire crop is sold abroad, half of it in England and the remainder in other countries of Europe and the United States.

Cereals and vegetables are about a fifth of the exports. Rice thrives in the delta, but much has to be imported to feed the people. Wheat is a still larger crop, and the sur plus wheat, maize, and beans are sent to Europe. Egyptian onions go to the United States as well as European countries. Tobacco is one of the largest imports, as its cultivation in Egypt is prohibited; a great deal of Turkish leaf is therefore imported to make the "Egyptian cigarettes" that are sold all over the world. The imports of animal products are much larger than the exports.

The industries have small development, and manufactures are, as a natural consequence, the largest imports; textiles, hardware and machinery, glass, and chemicals also

are the most important purchases. Egypt, having no timber, imports much lumber from the northern countries and England sends coal. The cotton exports, however, are so large that Egypt as a rule sells more to other nations than she buys from them. Our purchases of Egyptian cotton

FIG. 161.—A farm scene on the Nile.

are worth two or three times as much as our sales to Egypt. Observe in Fig. 1 the important railroad connections between the Suez Canal and the Nile and the Nile railroad extending to Khartum, giving Egypt rapid communications with the eastern Sudan. Alexandria is the largest port and commercial city. Cairo is the largest city in Africa.

Tripoli.—This dependency of Turkey has the largest caravan trade with the Sudan, its coast-line being nearest to the Sudan and the wells along its desert routes being most numerous (Fig. 162). Ostrich-feathers, ivory, gold-dust, and hides are brought across the desert on camels, which carry back such European manufactures as the Su-

danese desire. Most of Tripoli is a sandy waste, interspersed with fertile oases producing dates. Its trade with Europe is not very large.

Algeria.—This is the most important colony of France (Fig. 163). Five-sixths of the exterior trade is with the mother country. Algeria sends to France all kinds of

FIG. 162.—A camel caravan crossing the Sahara.

early vegetables, which are carried on fast steamers to Marseilles, and are for sale in the Paris markets from thirty-five to forty hours after leaving Africa. Tobacco, one of the most remunerative crops, is sent largely to France. Wheat, barley, olives, and oil-seeds are large crops sent to Marseilles. Algeria is one of the important wine producers, the vine thriving everywhere. France buys Algerian wines to mix with the cheaper French vintages. Large cork forests supply much of the cork of commerce. The oases on the edge of the Sahara make Algeria one of the great exporters of dates.

Algeria buys nearly all its manufactures in France. The largest exports are tobacco, cereals, esparto for paper-making, wine, iron ore, cork, and vegetables. Our country has very little share in the trade.

Tunis.—Tunis has made great progress under the French *régime.* Agriculture, the largest interest, has developed.

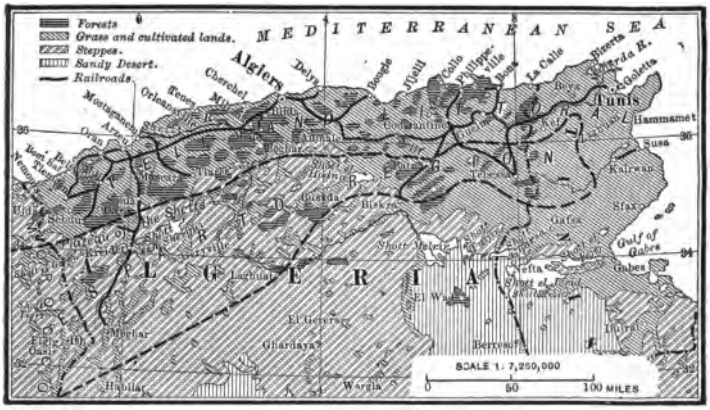

Fig. 163.—Algeria and Tunis.

Algiers, the capital and chief port, has a fine artificial harbor, the fastest steamship connections with Marseilles, and exports more vegetables, tobacco, flax, wine, and sheep than any other port. Its great commercial advantages are its central position on the coast and the shortest sea route to Marseilles.

The soil of the Tell (Fig. 163) is rich, producing cereals, olive-oil, and wine for export. The olive-oil and dates of Tunis are regarded as the best in the world. Three-fifths of the trade is with France and Algeria, England, Malta, and Italy having a small part of it.

Morocco.—This country is steeped in barbarism, though nearer to Europe than any other part of Africa. Its people are fanatical Mohammedans, and white men are not safe in most parts of the land. There are no railroads, and no roads except mule and camel paths. Tangier, Mogador, and a few smaller ports are open to foreign trade, which is very small. The imports are cotton, silks, hardware, candles, and petroleum. The chief exports are beans, cattle, wool, goat-skins, eggs, and wax. Morocco has now come under the rule of France and there is no doubt that its large resources will be developed.

Tropical Africa.—Underground waters in the Sahara come to light in natural depressions (wells), or are reached

by boring; the surrounding lands are turned into oases, date-palms and cereals are raised, and thus some commercial value is given to the desert.

Most of the tropical regions south of the Sahara are now held by European powers that are trying to develop commerce. The climate nearly everywhere is very unhealthful. In large regions human porterage is as yet the only means of transportation. The banana, yam, manioc, poultry, and goats are the food staples of the natives. Foreign commerce is not important except along the coasts and in the great river-basins of the Niger and the Congo, where the streams afford good transportation facilities.

FIG 164.—THE OIL-PALM.
The native has climbed the tree to collect the fruit from which the oil is obtained.

The coasts of tropical Africa export palm-oil (mainly for soaps, Fig. 164), rubber, coffee, ground-nuts (peanuts), ivory, and a few other tropical products, and import cotton goods, cutlery, spirits, firearms, brass wire, and several other commodities. Far larger quantities of ivory and rubber are derived from the upper Congo than from any of the coast regions. England, Germany, and France are most prominent in the trade with these tropical countries, but the commerce of the United States with tropical Africa is growing.

French textiles are the most important import into

Madagascar, a French possession. The chief exports are rubber, wax, hides, gold, and vanilla.

South Africa.—More than half of South Africa is deficient in rainfall. The western part of the country (Fig.

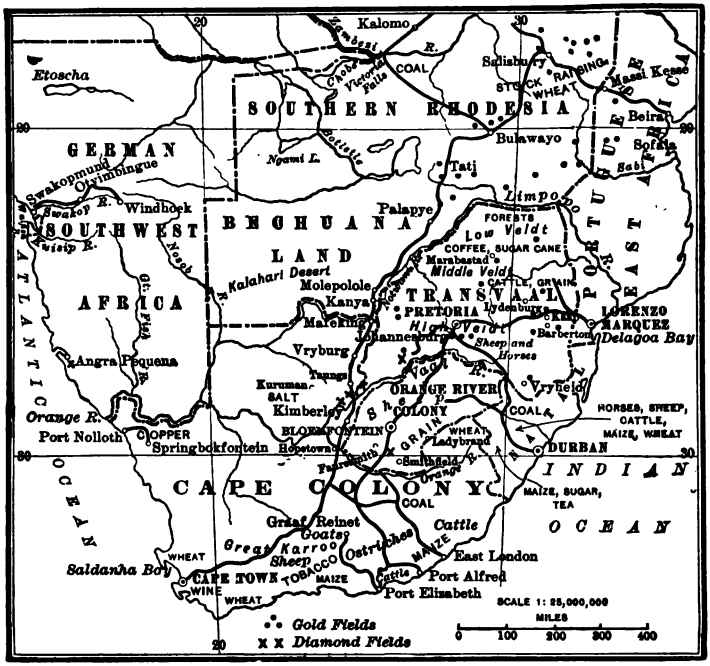

FIG. 165.—SOUTH AFRICA.

None of the ports, except Lorenzo Marquez, is naturally a good harbor. Immense sums have been spent to make them fairly safe and convenient for shipping. Cape Town, the capital of Cape Colony, is at a corner of the country inconveniently situated for the business of the interior. It is the leading port of South Africa only with respect to the export of gold and diamonds, which it nearly monopolizes. Excepting gold and diamonds, more of the things that South Africa sells to the rest of the world or buys from it pass through Port Elizabeth than through any other port.

165) can develop agriculture only where irrigation is possible; its mining and stock-raising interests will always be important. The eastern part, however, and the narrow

strip across the south end, are adapted for cereals and fruits of the temperate and subtropical climates. Most of this large territory is in the hands of the British. Portuguese East Africa and German West Africa have as yet little importance in commerce.

Observe in Fig. 165 the distribution of agricultural products. Thousands of acres near Cape Town are planted with grapes, yielding millions of gallons of wine, and fresh grapes sent in cold storage to Great Britain. South Africa produces much of the tobacco it consumes. Ostrich cul-

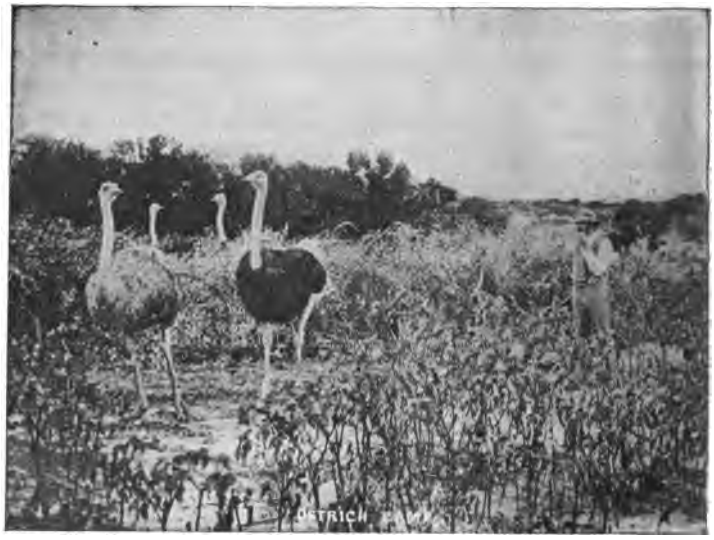

FIG. 166.—AN OSTRICH FARM.

Showing the dry scrubby lands (the bush country) to which the industry is confined.

ture (Figs. 165 and 166) is surpassed only by wool and the hair of the Angora goat in exports of animal products. The industry is centered mainly in the hands of men of considerable capital. Ordinary feathers are worth from $5

to $7 a pound, but the finest plumes from the wings and tail are sometimes worth as much as $200 a pound.

Wool-growing is the largest grazing industry. Many millions of sheep feed on the plains from the Great Karroo northward. Only Australasia and the Rio de la Plata countries surpass South Africa in the quantity of wool exported. The foreign sales are more than double the value of any other exports, excepting gold and diamonds.

Goats are much more numerous than cattle. The most important in commerce is the Angora goat, which was brought to the Cape from Asia Minor about the middle of the last century. The mohair exports (about $5,000,000 a year) surpass those of Asia Minor in fineness and softness of texture.

The Boers have long raised great herds of cattle on their large farms in the Transvaal, and there are many cattle along the coasts; hides are an important export, but cattle are far inferior to the sheep and Angora goat industries in export value. The demand for oxen is very large, as much of the transport still depends upon the slow ox-wagon. Observe in Figs. 167 and 168 the striking contrast between modern transportation and the ox trains of South Africa.

In 1907 the business interests of South Africa had fully recovered from the long and ruinous war between the Boers and Great Britain; now that peace has been restored the exports of gold far exceed in value those of all other commodities. This is due to the wonderful development of gold-mining in the Transvaal, particularly on the Witwatersrand (White River Ridge) around Johannesburg, which in 1898 produced more gold than any other country, and in 1909 supplied about a third of the gold mined in that year.

Ninety-eight per cent of all the diamonds of commerce come from the mines at Kimberley. All the mining interests are consolidated under one management, no more diamonds being mined than the market will take at a good price. New fields have been found in German S. W. Africa.

FIG. 167.—A cattle train in South Africa.

FIG. 168.—A refrigerated-beef train from Chicago.

These facts show that the chief sales of South Africa are gold, diamonds, wool, hides, mohair, wine, and ostrich-feathers. Nearly all of them go to Great Britain. Many of the exports finally reach other countries, but mainly through the channels of British commerce. Manufactures being little developed in South Africa, a great many commodities are purchased from other nations. In time of peace the United States sends to South Africa millions of dollars worth of wheat, flour, machinery, agricultural implements, hardware, lumber, and other things. Most of

FIG. 169.—MAIN STREET, PORT ELIZABETH.
The largest wholesale trade in South Africa is conducted on this street.

the cloths are imported from British mills. Wood products of all kinds are a large import, because South Africa has little timber. This part of Africa, highly favored by nature, has abundant raw materials to produce most of its manufactures. The reason why so little attention has been given to manufacturing industries is that the white population is still sparse, and has not been able as yet to develop manufactures as well as the natural products of their country (Fig. 169).

CHAPTER XXXIII

REBUILDING THE WORLD

In 1918, the nations emerged from the greatest war of all time—a war that spread around the world on land and sea, that killed or tortured more men, women and children, that left more homes in ruin, and brought dire want and hunger to more countries than any other war in history.

During those terrible four and a half years, the idea, perhaps, did not occur to most of us that, even then, the allied nations were preparing themselves to rebuild the world after they had vanquished the evil influences that had wrought colossal destruction.

Millions of the allies, men and women, were striving every day in those years, to produce the greatest result they could achieve. They worked with might and main in the military camp, the trenches, on the battle fields, in the hospitals and on the seas. They toiled in countless workshops and factories, sowed and planted on the farms, delved in hundreds of coal and iron mines and, in many other ways, helped the cause along. Most of their work was planned and supervised, in every stage, by trained experts of both sexes who could scientifically organize every step and process so that the highest efficiency, the greatest output possible, might be attained; and the millions were not only doing these things for the cause, but they were also getting discipline, and insight into the best ways of doing things so that we may carry on, more efficiently than ever, the toil and the duty that peace is bringing.

War has schooled us in efficiency.—As a working people, we have had incessant and strenuous training in efficiency, during these years of war. Efficient men and women are those who have acquired such knowledge or skill in their work, whatever it may be, that they can do the right thing or produce the right result without waste of time or labor. Great progress cannot be made without efficiency. Perhaps we may now help some peoples living under our own flag, the Philippine islanders, for example, to become really efficient.

The improvement of conditions in the Philippines has become very marked since the islands came under our flag in 1898; but much still remains to be done. H. J. Waters, President of the Kansas State Agricultural College, who was sent by our government to the Philippines to report on the conditions of agriculture, says the country is very backward but its possibilities are great. Less than half of its farm lands are under cultivation. With only a sixth of the population of Japan, it imports more foodstuffs per capita than that Empire. If its sugar planters grew as much sugar per acre as in Java, they would, without increase in acreage, lead the world in cane sugar production. The people import a fourth of the rice they eat, but if they raised as much per acre as Japan does, they would be the third largest producing country. If their acre yield of corn equalled that of Japan or the United States, they could support larger pork and poultry industries than Canada or Australia. The total population is less than 8,000,000. When the land is fully utilized and the fisheries, manufactures and commerce are developed, there will be enough food and wealth to support 40,000,000 people. Efficiency will be the great factor in producing this result. When it fully comes, we shall see a wonderful change in those fine islands, whose recent progress is so encouraging.

Inefficient farming.—Many countries have not yet begun,

adequately, to utilize the natural resources with which they are endowed. For years past, for example, the wheat crop in much of the great wheat growing region of our West has not yielded quite fifteen bushels to an acre. This is partly due to the practice of growing wheat on the same land for some years in succession, partly to insufficient fertilization, and also to poor culture and care. There is no reason why we should not raise thirty or more bushels of wheat to an acre as England does. By better care and tillage we have, in the past few years, increased our average wheat yield over three bushels per acre above our former average yield. In time, the great farms in North Dakota and in some other states will be divided into smaller ones and, if the land then receives the best culture that can be given to it, every square mile will feed a larger population than it now supports. In other words, we shall raise wheat more efficiently.

Large areas of land in many parts of the world will become food producers when we learn better how to provide them with the moisture they need to make them fertile. Great regions in our own West have naturally rich soil but lack water. We are reclaiming some of these areas where it is possible to bring water to them, and they are producing the finest of fruits, vegetables and grains, but these dry lands are so vast that water cannot be brought to all of them, though large areas have sufficient grass to make them useful in the grazing industry.

Dry farming.—Wide areas that lack sufficient water are turned to good account by means of dry farming. It was thought, not many years ago, that wheat could never be raised in North Dakota, west of the Missouri River, though the part of the state east of the Missouri was famous for its wheat fields. But anyone who now travels there during harvest sees wheat fields spreading to the horizon from the Bad Lands of the western border to the river. These yellow

fields are a glorious sight in that vast region which, a few years ago, produced only grass. By applying the efficient means this miracle has been wrought both in North Dakota and in western Kansas. Farmers who produce very good crops by dry farming keep the land surface well pulverized by plowing. The result is that the rain sinks deeper into the soil, evaporation is retarded and crops get the benefit of the precipitation. We do not know yet how much of our thirsty lands may thus be reclaimed; but we do know that dry farming is helping to develop large areas where the rainfall is less than 20 inches a year.

Getting the best from Nature's gifts.—The people of no country can be called fully efficient until they learn how to get the best that can be derived from the material that Nature provides. In southern Spain, the white mulberry, the favorite food of the silkworm, grows finely and the manufacture of silk was once a thriving industry there. But the Spaniard of to-day takes little interest in silk growing and this source of wealth has decayed. Neglecting such rich sources of wealth is not efficiency. All our ostrich feathers were once obtained only from wild birds found chiefly in the dry regions of Africa. Not many years ago, white men began to rear ostriches for their feathers on enclosed lands in South Africa. They soon found that they could greatly improve the quality of the feathers by rearing chicks only from birds that grew the finest plumage. In this way they have built up a great and prosperous industry because ostrich feathers are now more attractive than ever and therefore in greater demand. Efficient conduct of that business is making it a great success.

Many new fields invite the worker.—When the questions of the war are settled, explorers will enter new fields to see what they hold for man, in regions that have not been fully explored. In the Amazon basin are vast tracts

between the rivers that no man has yet seen. Some day, these regions may yield great wealth in rubber and other commodities. Canada holds some of the largest areas still unknown in North America. The pioneer farmers in Alberta, a few years ago, went, now and then, to the higher and dryer plateau west of their farms to round up their cattle. They found, here and there on the surface, what they thought were rocks, black in color. Experts said they were bits of bituminous coal; and we now know that the surface of Alberta is underlaid by one of the large coal fields of the world. There are still considerable areas further north that have never been entered by white men; and wealth of one kind or another may still be revealed in northern Canada.

It has been discovered, only recently, that a large region in the Northern Territory of Australia has water and that the cattle industry may be established there. So much of Australia is too dry to be turned to good account that every part of it that includes water resources is bound to be utilized.

Development in Africa has been almost wholly neglected during the war. It will now go on there more rapidly than ever. The great problem of the tropical regions has been solved in Africa. We know now that white men may live in the hot countries, attend to all their duties and keep in very good health. This great discovery means that the lands within the tropics will, in time, be fitted to yield all the goods they have in store for the human race. Africa will benefit the whole world; and the hard work to be done there will be very largely shared by millions of blacks. We shall not again see such brutality in Africa as has been inflicted upon the natives by one European power. How much better it is to train them for efficient service. Before the war, they had graded road beds for thousands of miles of railway; they had strung telegraph wires across the con-

tinent, were telegraph operators, and some were even drivers on locomotives, as well as carpenters, printers and so on. If we make the most of the efficiency that can be developed in the African native, he will have a worthy share in the development of his continent.

Development of South America.—A great opportunity is now before our people, efficiently to help in the upbuilding of South America which, in the development of its resources and trade, still lags far behind some other parts of the world. The South American republics are very rich in undeveloped resources but they need foreign skill, capital and immigration to make their vast natural wealth available; and above all, they need more railroads.

On the llanos of Venezuela are over 2,000,000 cattle, but they might support millions more. Venezuela, however, will never advance far with only 600 miles of railroad in its vast territory more than twice as large as Texas. Venezuela has enormous resources that can be developed only when she has the means of handling them.

Every indication points to enormous supplies of petroleum in the northwest of Colombia. When coal and iron are found near one another, it is a great advantage, for coal is needed to smelt iron ore. It happens that these two minerals are very near together in many parts of that country; but the larger part of Colombia has no connection with the sea by rail or navigable river.

The metal platinum, now growing in usefulness every year, was first revealed in Colombia more than 180 years ago and is now a regular export. But more bulky and less valuable minerals such as copper, lead, iron and zinc, in which the country abounds, are not moved, because a great deal of Colombia's trade has to be carried over roads that are little more than mule tracks; and mule tracks do not largely promote the trade and prosperity of any country.

South America's enormous resources will be developed

just as soon as the conveniences for developing them are supplied. Our own country will be very conspicuous in helping to open the treasure house of South America; and, first of all, in these early days of peace, will come larger and closer business relations between the United States and South America, utilizing immediately all the advantages that the Panama Canal now gives to trade, and creating new opportunities as fast as improved conditions are supplied.

STATISTICS OF THE PRINCIPAL COUNTRIES

Year.	Country.	Area (in thousand sq. miles).	Population (in thousands).	Density (to the sq. mile).	Imports (in million dollars).	Exports (in million dollars).
1913	Argentina	1,139.2	8,700.0	7.64	406.8	466.59
1913	Australia	2,974.6	5,044.0	1.70	388.1	365.42
1913	Austria-Hungary	261.0	51,505.0	197.31	691.5	562.2
1913	Belgium	11.3	7,639.0	671.69	974.6	717.15
1913	Bolivia	708.1	2,268.0	3.20	21.3	36.5
1913	Brazil	3,291.4	24,308.0	7.39	326.8	315.5
1911	Bulgaria	44.0	4,767.0	108.20	38.4	34.6
1914	Canada	3,729.6	7,758.0	2.08	633.6	431.5
1913	Chile	292.4	3,464.0	11.85	120.2	144.6
1913	China	4,277.0	336,042.0	78.57	427.4	294.0
1913	Colombia	435.2	5,473.0	12 57	26.9	34.3
1913	Costa Rica	18.6	411.0	21.99	8.6	10.3
1914	Cuba	45.8	2,474.0	53.92	133.9	170.7
1913	Denmark	15.5	2,861.0	183.56	229.2	170.8
1912	Ecuador	118.6	15,00.0	12.64	10.6	13.7
1913	Egypt	383.9	11,287.0	29.40	137.7	156.5
1913	France	207.1	39,602.0	191.19	1,642.1	1,326.9
1913	Germany	209.8	67,095.0	31.98	2,563.3	2,403.3
1912	Greece	41.5	3,912.0	94.38	30.4	28.2
1913	Guatemala	48.2	2,119.0	43.88	10.0	14.5
1913	Haiti	11.0	2,500.0	225.79	10.9	17.2
1913	Honduras	46.2	589.0	13.09	5.1	3.3
1914	India	1,773.0	315,133.0	177.73	594.5	792.3
1913	Italy	110.7	35,239.0	318.36	702.0	483.2
1913	Japan	147.6	52,985.0	358.74	363.2	314.9

STATISTICS OF THE PRINCIPAL COUNTRIES—(*Continued*)

Year.	Country.	Area (in thousand sq. miles).	Population (in thousands).	Density (to the sq. mile).	Imports (in million dollars).	Exports (in million dollars).
1913	Korea.....	84.1	15,164.0	180.30	35.6	15.3
1913	Mexico.....	767.3	15,446.0	20.13	93.0	129.9
1913	Netherlands....	13.1	6,213.0	.....	1,574.9	1,239.3
1913	New Zealand ...	104.7	1,152.0	10.00	691.5	562.2
1913	Nicaragua.....	49.5	690.0	13.93	5.7	7.7
1913	Norway.....	124.6	2,436.0	19.54	148.0	102.0
1913	Paraguay.....	97.7	800.0	8.19	8.1	5.6
1913	Persia.....	635.1	9,500.0	14.96	46.9	36.1
1913	Peru.....	683.3	5,800.0	8.49	29.6	44.4
1912	Portugal.....	35.5	5,960.0	167.89	80.5	37.0
1911	Rumania.....	53.9	7,602.0	141.14	109.9	133.5
1912	Russia.....	8,361.7	167,920.0	20.08	603.4	782.1
1913	Salvador.....	8.1	1,210.0	148.1	6.1	7.6
1913	Santo Domingo..	28.0	725.0	25.89	9.2	10.4
1911	Serbia.....	33.7	4,622.0	137.12	22.2	22.5
1914	Siam.....	195.0	8,149.0	41.79	33.8	43.1
1913	Spain.....	194.7	19,944.0	102.39	238.6	194.2
1913	Sweden.....	172.9	5,609.0	32.44	226.8	219.0
1913	Switzerland.....	15.9	3,781.0	236.97	370.5	265.6
1912	Turkey.....	682.2	20,600.0	30.19	193.0	105.0
1913	United Kingdom	121.3	46,036.0	379.47	3,207.8	2,556.1
1914	United States...	3,627.5	100,102.0	27.60	1,893.9	2,329.6
1913	Uruguay.....	72.1	1,226.0	16.99	50.6	65.1
1914	Venezuela.....	393.9	2,756.0	7.00	17.0	26.3

INDEX

THE END

Batangas, P. I.
Dawson City, Alas[illegible]
Constantinople, Turkey.
Sierra mojada, Mexico.
Comayagua, Honduras. C. A.
Pernambuco, Brazil. S. A.
Asuncion, Paraguay, S. A.